HF / 50MHz ALL MODE TRANSCEIVER

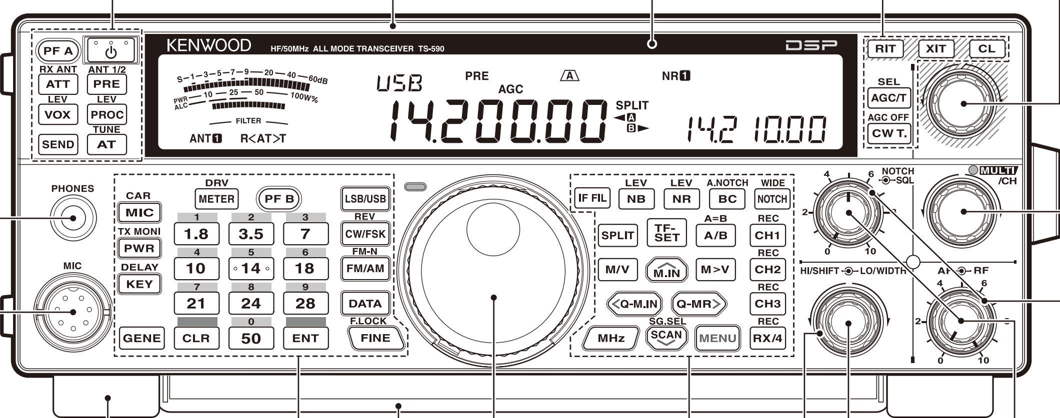
TS-590S

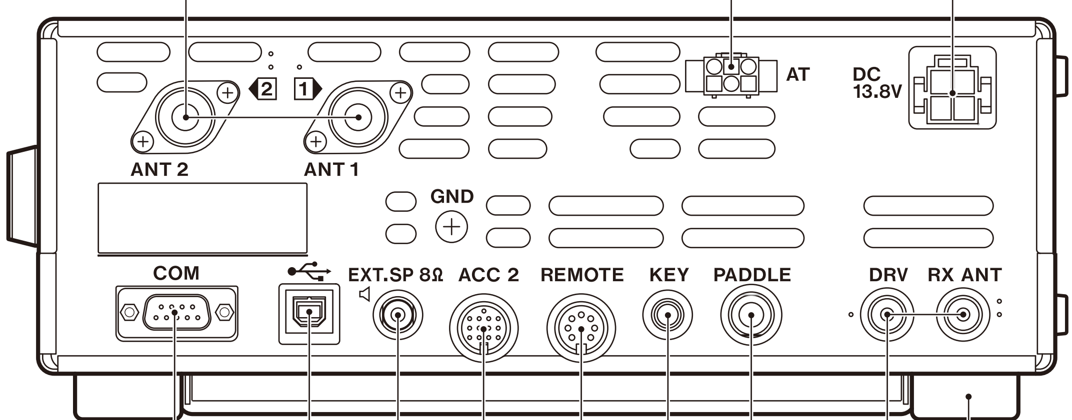
SERVICE MANUAL

KENWOOD

Kenwood Corporation

B51-8941-00 (N) 283





This product complies with the **RoHS** directive for the European market.

This product uses Lead Free solder.

CONTENTS

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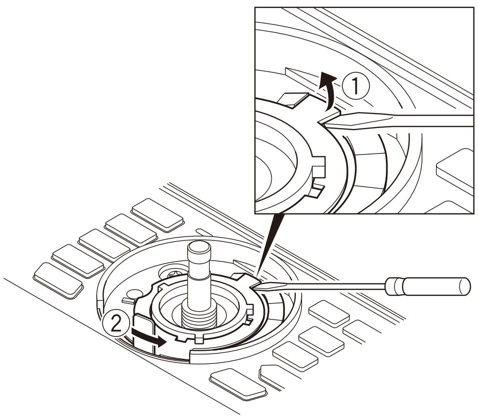
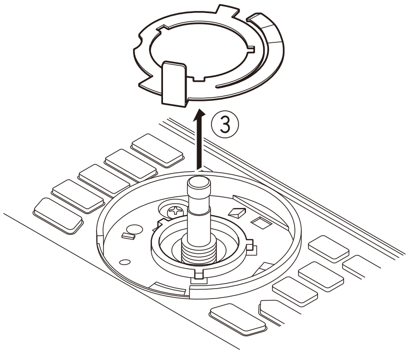
DISASSEMBLY FOR REPAIR

Removing the torque changeover lever (G02-1858-03)

1. Insert the tip of a flat-head screwdriver (or other implement) under the tab of the torque changeover lever, then lift the tab using the tip of the flat-head screwdriver. (①)
   Caution: Be careful not to damage the panel when lifting it.
2. Turn the lever section of the torque changeover lever to the right, as in the position described in step 1. (②)

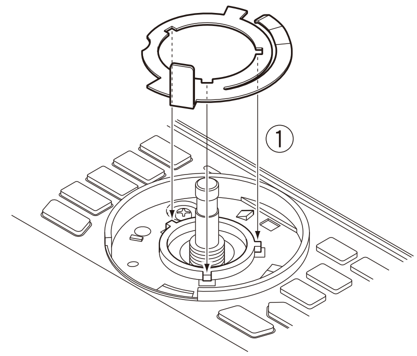


3. Lift the torque changeover lever and remove it from the panel. (③)

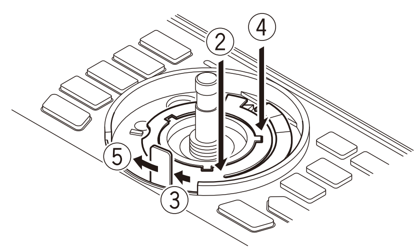


Mounting the torque changeover lever (G02-1858-03)

1. Insert the torque changeover lever by aligning the three tabs of the panel. (①)

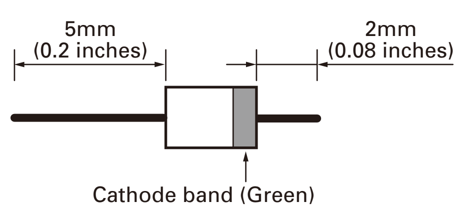


2. Slightly turn the lever section of the torque changeover lever to the left (③) while pressing the surface near the tab at the lower right of the torque changeover lever (②).
   Caution: Confirm that the torque changeover lever is caught by the lower right tab of the panel.
3. Turn the lever section of the torque changeover lever to the left (⑤) while pressing the surface near the tab at the upper right of the torque changeover lever (④), then mount it onto the panel.



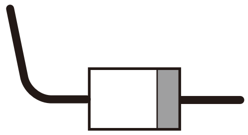
Procedures when Replacing the Diode (1SR139-400) for hand mounting

1. When replacing the diode (D304: 1SR139-400) used by the Control unit (A/3) (PCB number: J79-0279-09), cut the leg of a new diode.



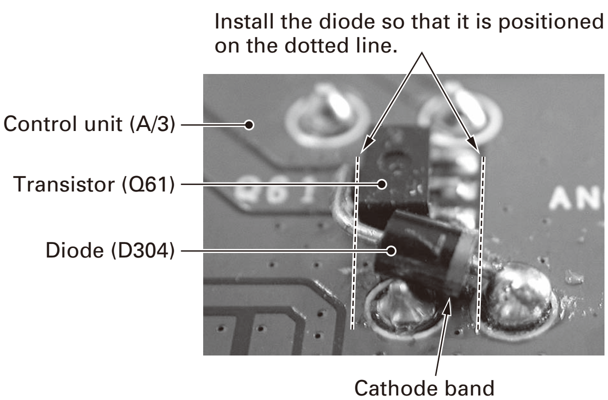
DISASSEMBLY FOR REPAIR

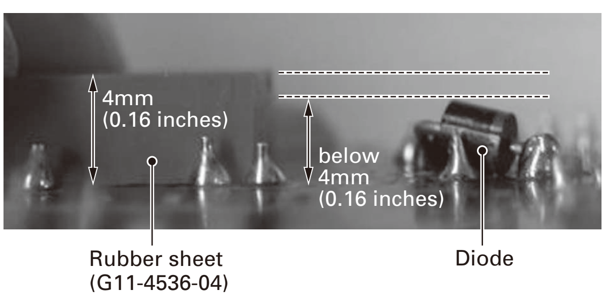
2. Bend the leg of the diode as shown in the figure.



3. Solder the diode between Q61 (Collector) and the solder pad (Base) of the Control unit (A/3), as shown in the figure.

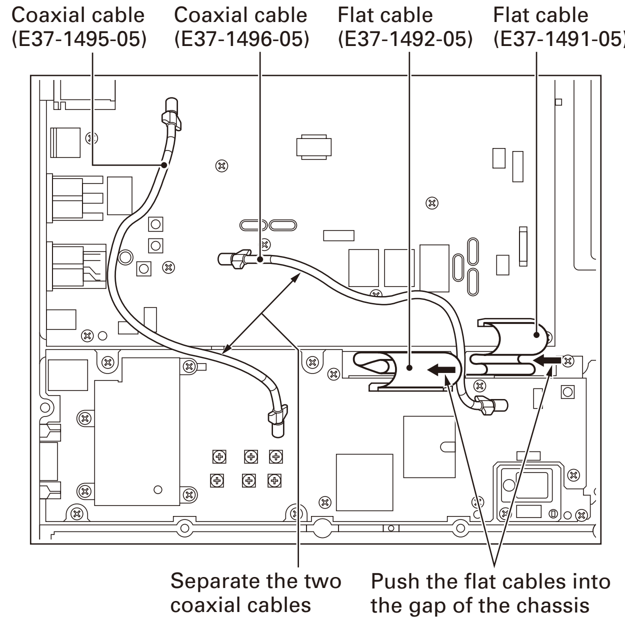
Note:
1) Confirm the direction of the cathode band when installing the diode.
2) Install the diode so that it is positioned on the dotted line.
3) Install the diode so that its height from the surface of the PCB is 4mm (0.16 inches) or less (Height of rubber sheet (G11-4536-04): 4mm (0.16 inches)).





Precautions for Reassembly

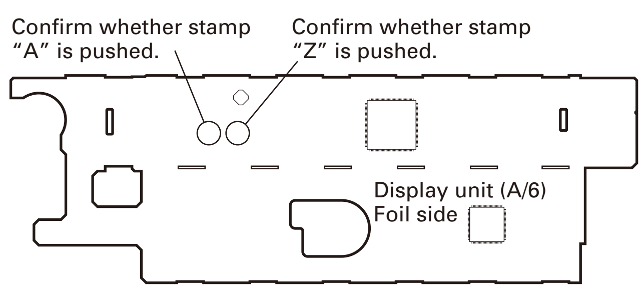
Perform the following steps when assembling the bottom side of the transceiver.
1. Separate the two coaxial cables (E37-1495-05, E37-1496-05) as shown in the figure.
2. Push the two flat cables (E37-1491-05, E37-1492-05) into the gap of the chassis so they do not come into contact with the cabinet.



Caution for Replacing the LED (B30-2322-05, B30-2323-05)

When replacing the "B30-2322-05" or "B30-2323-05" LED used by the Display unit (A/6), order and replace the LED for service into which the rank is divided according to brightness, according to the following procedures, so that the brightness of the LED backlight remains uniform after replacing the LED.

1. Confirm whether the "A" or "Z" stamp is pushed on the foil side of Display unit (A/6).



2. Order and replace the LED for service as shown in the following table according to whether stamp "A" or "Z" exists or not.

Service LED part number for B30-2322-05 (Amber)		Service LED part number for B30-2323-05 (Green)	
Stamp "A" exists	Stamp "A" does not exist	Stamp "Z" exists	Stamp "Z" does not exist
W05-1636-00 (High brightness)	W05-1637-00 (Low and medium brightness)	W05-1638-00 (High brightness)	W05-1639-00 (Low and medium brightness)

CIRCUIT DESCRIPTION

Frequency Configuration

Figure 1 shows the frequency configuration of this transceiver.

While transmitting, FM mode operates in a double conversion and other modes (AM, SSB, CW, FSK) operate in a triple conversion.

While receiving, the first IF operates in 73.095MHz triple conversion. In modes other than FM, the third IF is 24kHz, and the IF signal is converted by an A/D converter and input into DSP. The FM mode is detected in the FM IC, and the audio signal is converted by an A/D converter and input into the DSP. Under the following conditions, the first IF operates its reception in 11.374MHz double conversion.

1) Modes other than AM or FM
2) Amateur band within the 1.8/3.5/7/14/21MHz bands
3) DSP filter's bandwidth is 2.7kHz or lower

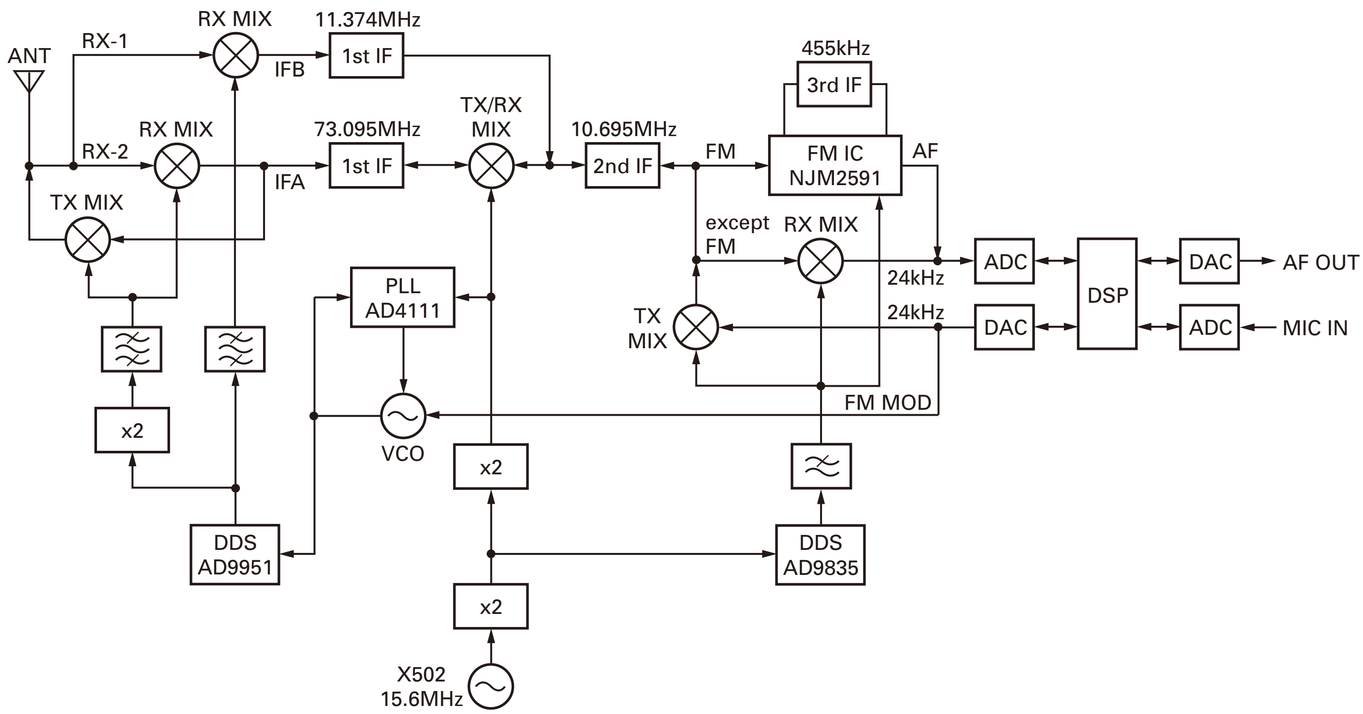


Fig. 1 Frequency configuration

Reference Signal Generator

The reference frequency (fstd), which is used to control the individual LO frequencies, oscillates at 15.6MHz in a crystal oscillation circuit (X502, Q501). This 15.6MHz signal passes through a buffer (Q502) and is doubled in a multiplier (Q503) to generate a 31.2MHz signal. The 31.2MHz signal is used as a reference signal for LO3 (the third local oscillator) DDS (IC601). The 31.2MHz signal is doubled in multipliers (Q504, Q505) to generate a 62.4MHz signal. The 62.4MHz signal is used as a reference signal for LO1 (the first local oscillator) PLL (IC801).

The SO-3 (TCXO unit: 15.6MHz) is configured as an option in this transceiver, so that you can replace the crystal oscillation circuit (X502, Q501) with the SO-3. When using the SO-3, remove the CN903 and CN904 short jumper wires in order to stop the operation of the crystal oscillation circuit (X502, Q501).

LO1/ LO2/ LO3

■ LO1 (the first local oscillator)

The VCO (Q806) oscillates at 196.8MHz. Only the double frequency component, 393.6MHz, of this VCO's oscillation output is extracted and input into PLL (IC801) pin 6. This input signal is divided into 1/N within the PLL. Also, the 62.4MHz signal (15.6MHz reference frequency x 4) is input into PLL pin 8 and divided into 1/R within the PLL. By a phase comparator in the PLL, the frequency divided into 1/N and the frequency divided into 1/R are compared, and then the frequency is locked. The comparison frequency (fø) at this time is 120kHz when transmitting FM, and 2.4MHz otherwise.

393.6MHz signal locked by PLL (IC801) would be used as reference by DDS (IC803). The output signal from DDS (IC803) is 12.495MHz to 32.195MHz when RX-1 path is selected, amplified at the broad band amplifier (IC804),

CIRCUIT DESCRIPTION

and then goes through BPF and is output as LO1. When RX-2 path is selected or when transmitting, 36.5625MHz to 66.5475MHz is output, amplified by the broad band amplifier (IC804), and then doubled in the multiplier (D652), goes through BPF, and is output as 73.120MHz to 133.095MHz LO1.

■ LO2 (the second local oscillator)

The reference oscillating circuit's output signal 15.6MHz signal passes through a buffer (Q502) and is doubled in a multiplier (Q503) to generate a 31.2MHz signal. The 31.2MHz signal is also used as the DDS (IC601)'s reference frequency, and therefore its resistance is divided. Then, the 31.2MHz signal is doubled in multipliers (Q504, Q505) to generate a 62.4MHz signal.

The 62.4MHz signal's high harmonic is cut in the BPF and the signal is amplified in the amplifier (Q506) to generate LO2. If IFB is selected, the diode switch (D501) cuts the LO2 output.

■ LO3 (the third local oscillator)

The LO3 used in the modulator and the detector is generated in the DDS (IC601). The DDS output signal passes through the buffer (Q602) and LPF to generate LO3.

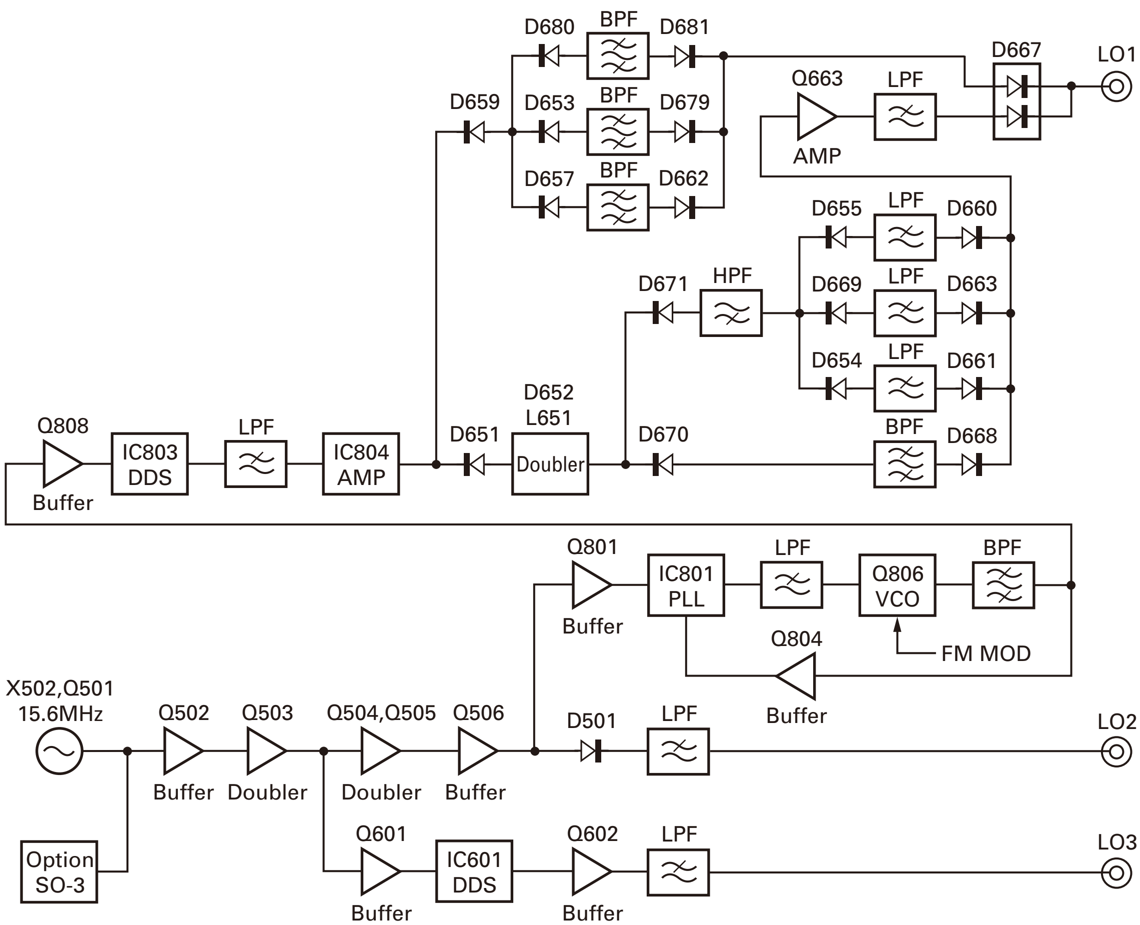


Fig. 2 Reference signal generator, LO1/ LO2/ LO3

CIRCUIT DESCRIPTION

● IF=73M

Frequency: 0.03~60MHz

HF TX/RX LO1		DDS AD9951 (DEN1)									
		USB		LSB		CW		CW-R		CWN	
		RX	TX	RX	TX	RX	TX	RX	TX	RX	TX
Filter offset 1		+1.5k	+1.5k	–1.5k	–1.5k	0	0	0	0	0	0
RIT		(Δ RIT)	-	(Δ RIT)	-	(Δ RIT)	-	(Δ RIT)	-	(Δ RIT)	-
XIT		-	(Δ XIT)	-	(Δ XIT)	-	(Δ XIT)	-	(Δ XIT)	-	(Δ XIT)
CAR correction	IF10M_2.7k	+(CAR1)	+(CAR1)	–(CAR1)	–(CAR1)	+(CAR1)	+(CAR1)	+(CAR1)	+(CAR1)	-	-

HF TX/RX LO1		DDS AD9951 (DEN1)									
		CWN-R		FSK		FSK-R		AM		FM	
		RX	TX	RX	TX	RX	TX	RX	TX	RX	TX
Filter offset 1		0	0	–(SHIFT/2)	–(SHIFT/2)	–(SHIFT/2)	–(SHIFT/2)	0	0	0	0
RIT		(Δ RIT)	-	(Δ RIT)	-	(Δ RIT)	-	(Δ RIT)	-	(Δ RIT)	-
XIT		-	(Δ XIT)	-	(Δ XIT)	-	(Δ XIT)	-	(Δ XIT)	-	(Δ XIT)
CAR correction	IF10M_2.7k	-	-	-	-	-	-	-	-	-	-

● IF=11M

Frequency: 0.03~21.5MHz (Amateur bands within 1.8/3.5/7/14/21MHz band only)

HF TX/RX LO1		DDS AD9951 (DEN1)							
		USB	LSB	CW	CW-R	CWN	CWN-R	FSK	FSK-R
		RX	RX	RX	RX	RX	RX	RX	RX
Filter offset 1		+1.5k	–1.5k	0	0	0	0	–(SHIFT/2)	–(SHIFT/2)
RIT		(Δ RIT)	(Δ RIT)	(Δ RIT)	(Δ RIT)	(Δ RIT)	(Δ RIT)	(Δ RIT)	(Δ RIT)
CAR correction	IF11M_2.7k	+(CAR2)	–(CAR2)	+(CAR2)	+(CAR2)	-	-	-	-
	IF11M_500	+(CAR3)	–(CAR3)	+(CAR3)	+(CAR3)	-	-	-	-

(Δ RIT): RIT frequency variable amount (–9.99~+9.99kHz)
(Δ XIT): XIT frequency variable amount (–9.99~+9.99kHz)
(SHIFT): FSK shift width frequency (170Hz, 200Hz, 425Hz, 850Hz, Initial value:170Hz)
CAR correction: SSB IF-Filter adjustment volume. 0 when using Narrow option filter.
(CAR1): IF 10.695MHz, SSB Normal filter compensation value
(CAR2): IF 11.374MHz, Normal filter compensation value
(CAR3): IF 11.374MHz, Narrow filter compensation value

Table 1-1 LO1 frequency shift data

CIRCUIT DESCRIPTION

LO3		DDS AD9835 (DEN2)											
		USB				LSB		CW		CW-R		CWN	
		RX			TX	RX	TX	RX	TX	RX	TX	RX	TX
		IF73M		IF11M									
		RX<21.3M, 21.5≦RX	21.3≦RX, RX<21.5										
Filter offset 1		–46.5k	+1.5k	–46.5k	–46.5k	–1.5k	–1.5k	0	0	0	0	0	0
CW pitch		-		-	-	-	-	-	-	-	-	-	-
FSK tone		-		-	-	-	-	-	-	-	-	-	-
CAR correction	IF10M_2.7k	+(CAR1)			+(CAR1)	–(CAR1)	–(CAR1)	+(CAR1)	+(CAR1)	+(CAR1)	+(CAR1)	-	-
	IF11M_2.7k			+(CAR2)	+(CAR2)	–(CAR2)		+(CAR2)		+(CAR2)		-	-
	IF11M_500			+(CAR3)	+(CAR3)	–(CAR3)		+(CAR3)		+(CAR3)		-	-

LO3		DDS AD9835 (DEN2)									
		CWN-R		FSK		FSK-R		AM		FM	
		RX	TX	RX	TX	RX	TX	RX	TX	RX	TX
Filter offset 1		0	0	0	0	0	0	0	0	0	0
CW pitch		-	-	-	-	-	-	-	-	-	-
FSK tone		-	-	-	-	-	-	-	-	-	-
CAR correction	IF10M_2.7k	-	-	-	-	-	-	-	-	-	-
	IF11M_2.7k	-	-	-	-	-	-	-	-	-	-
	IF11M_500	-	-	-	-	-	-	-	-	-	-

CAR correction: SSB IF-Filter adjustment volume. 0 when using Narrow option filter.
(CAR1): IF 10.695MHz, SSB Normal filter compensation value
(CAR2): IF 11.374MHz, Normal filter compensation value
(CAR3): IF 11.374MHz, Narrow filter compensation value

Table 1-2 LO3 frequency shift data

Receiver Circuit

In an amateur frequency band or mode that requires anti-proximate interference, the receive signal passes through the double conversion RX-1 path, and in other frequency bands and modes, it passes through the triple conversion RX-2 path. (Refer to table 2)

Mode			SSB	CW	FSK	AM	FM
RX-1 path	Conversion method		Double			-	
	IF frequency	1st	11.374MHz			-	
		2nd	24kHz			-	
RX-2 path	Conversion method		Triple				
	IF frequency	1st	73.095MHz				
		2nd	10.695MHz				
		3rd	24kHz				455kHz

Table 2 Mode, conversion method, and IF frequency

■ From the antenna terminal to the preamplifier (Q236)

The receive signal from the antenna terminals (ANT1/ANT2) passes through the antenna changeover relay (K44) in the Final unit (X45-391 A/2), the antenna tuner's IN/THROUGH changeover relay (K45), the transmission/reception changeover relay (K46), and an image filter, and is sent from CN51 to the TX-RX unit (X57-785 A/2)'s CN100 (RAT) through a co-axial cable.

The signal input into the TX-RX unit passes through the RX ANT changeover relay (K101) and enters the attenuator circuit (ATT) which is approximately 12dB. This can be switched to approximately 20dB by removing the CN101 short jumper. Then, the signal passes through LPF for IF trap, the surge absorption limiter, and the BC band attenuating circuit (removes 30kHz to 1.705MHz), and enters the BPF. In the BC band attenuating circuit, in order to avoid interference by high-output broadcasting stations, 11.7MHz and 15.5MHz trap circuit is inserted into E type only.

CIRCUIT DESCRIPTION

The BPF divides in the range as shown in table 3. The BC band's BPF includes ATT for avoiding cross-modulation by medium wave band high-output station (ATT ON: CN102=open, CN103=short, ATT OFF: CN102=short, CN103=open). The transmit signal also passes through the BPF when transmitting.

The preamplifier (Q236) receives the signal passed through the BPF. In this model, it is an emitter grounding circuit which uses a bipolar transistor. Q239 switches the emitter's returning amount to adjust the gain. Approximately 20dB is gained in 21.5 to 60MHz and approximately 12dB in other frequencies. The preamplifier circuit can be passed by turning off the PRE display with the preamplifier key.

Band	Filter range
135kHz	30~522kHz
BC	522kHz~1.705MHz
1.8MHz	1.705~2.5MHz
3.5MHz	2.5~4.1MHz
5MHz	4.1~6.9MHz
7MHz	6.9~7.5MHz
10MHz	7.5~10.5MHz
	10.5~13.9MHz
14MHz	13.9~14.5MHz
18MHz	14.5~21.5MHz
21MHz	
28MHz	21.5~30.0MHz
50MHz (TX)	49.0~54.0MHz
50MHz (RX)	30.0~60.0MHz

Table 3 BPF range

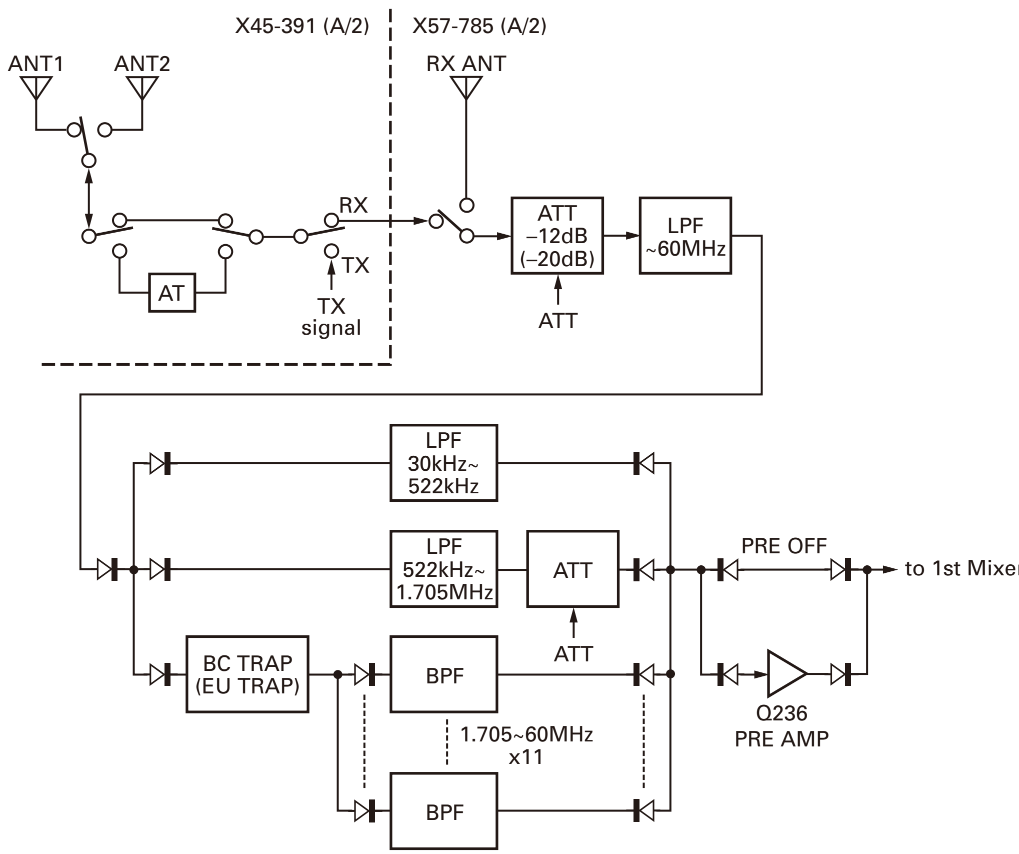


Fig. 3 From antenna terminal to preamplifier (Q236)

CIRCUIT DESCRIPTION

■ From the preamplifier (Q236) to the second IF frequency (10.695MHz/11.374MHz)

The signal from the preamplifier (Q236) output to the second IF amplifier 1 (Q451) is spread into 2 paths: RX-1 and RX-2, depending on the frequency band (refer to table 4). The RX-1 path is selected when the “L” signal is added to Q273, and the RX-2 path is selected if the “H” signal is added.

The RX-1 path signal passes through the LPF for IF trap, is integrated with LO1 (12.495 to 32.195MHz) in the quad-balance first mixer (Q263 to Q266), and is then converted to the first IF (11.374MHz). The first IF signal passes through the 2-pole MCF (XF301) and enters the second IF amplifier 1 (Q451).

The RX-2 path signal passes through the LPF for IF trap, is integrated with LO1 (73.120 to 133.095MHz) in the quad-balance first mixer (Q321 to Q324), and is then converted to the first IF (73.095MHz). The first IF signal passes through the 2-pole MCF (XF371), and by the trans-feedback type NFB (negative feedback) first IF amplifier (Q391), is amplified by approximately 12dB. The amplified signal is mixed with LO2 (62.4MHz) in the second mixer (D422, D423), converted to the second IF (10.695MHz), and then enters the second IF amplifier 1 (Q451). The second mixer is a passive type that uses a diode, and is a bilateral circuit that converts both receive signal's frequency at the time of reception and transmission signal's frequency at the time of transmission.

The second IF signal that passed through the RX-1 or RX-2 path is amplified by approximately 13dB in the second IF amplifier 1 (Q451), and is then divided into 2 paths: the NB (noise blanker) circuit and the blanking circuit (D461 to D464). Blanking is carried out by D461 to D464.

Then, the second IF signal passes through the IF filter. One of 5 filters is selected, depending on the frequency and the mode (refer to table 5).

The second IF signal that passed through the IF filter enters the AGC circuit (diode ATT circuit: D522 to D524). The AGC voltage output from the DSP is added to D522 to D524, the change of AGC voltage changes the current on the pin diode and controls the attenuation of the signal passing through. And, the second IF amplifier 2 (Q541) and the second IF amplifier 3 (Q521, Q522) altogether amplify by the total of approximately 32dB, and the signal passes through the simplified diode ATT circuit (D525). The voltage determined in the adjustment mode is added to D525, and adjusts the difference of the total gains of the RX-1 and RX-2 paths.

IF frequency	IF filter	Mode				
		FM	AM	SSB	FSK	CW
10.695MHz	15kHz	✔	✔			
	6kHz		✔	✔		
	2.7kHz			✔	✔	✔
11.374MHz	2.7kHz			✔	✔	✔
	500Hz			✔	✔	✔

Table 5　Selecting an IF filter

Band	BPF selection classification	IF switching frequency criteria	IF frequency		
			TX IF	RX IF	
135kHz	f <522kHz	f <522kHz	73M	73M	RX-2
BC	0.522≦ f <1.705MHz	0.522≦ f <1.705MHz		73M	RX-2
1.8MHz	1.705≦ f <2.50MHz	1.705≦ f <2.10MHz		11M	RX-1
		2.10≦ f <3.40MHz		73M	RX-2
3.5MHz	2.50≦ f <4.10MHz	3.40≦ f <4.10MHz		11M	RX-1
5MHz	4.10≦ f <6.90MHz	4.10≦ f <6.90MHz		73M	RX-2
7MHz	6.90≦ f <7.50MHz	6.90≦ f <7.50MHz		11M	RX-1
10MHz	7.50≦ f <10.5MHz	7.50≦ f <10.5MHz		73M	RX-2
	10.5≦ f <13.9MHz	10.5≦ f <13.9MHz		73M	RX-2
14MHz	13.9≦ f <14.5MHz	13.9≦ f <14.5MHz		11M	RX-1
18MHz	14.5≦ f <21.5MHz	14.5≦ f <20.9MHz		73M	RX-2
21MHz		20.9≦ f <21.5MHz		11M	RX-1
28MHz	21.5≦ f <30.0MHz	21.5≦ f <30.0MHz		73M	RX-2
50MHz (TX)	49.0≦ f <54.0MHz	49.0≦ f <54.0MHz		-	-
50MHz (RX)	30.0≦ f <60.0MHz	30.0≦ f <60.0MHz	-	73M	RX-2

Table 4　Criteria for selecting the RX-1 or RX-2 path

CIRCUIT DESCRIPTION

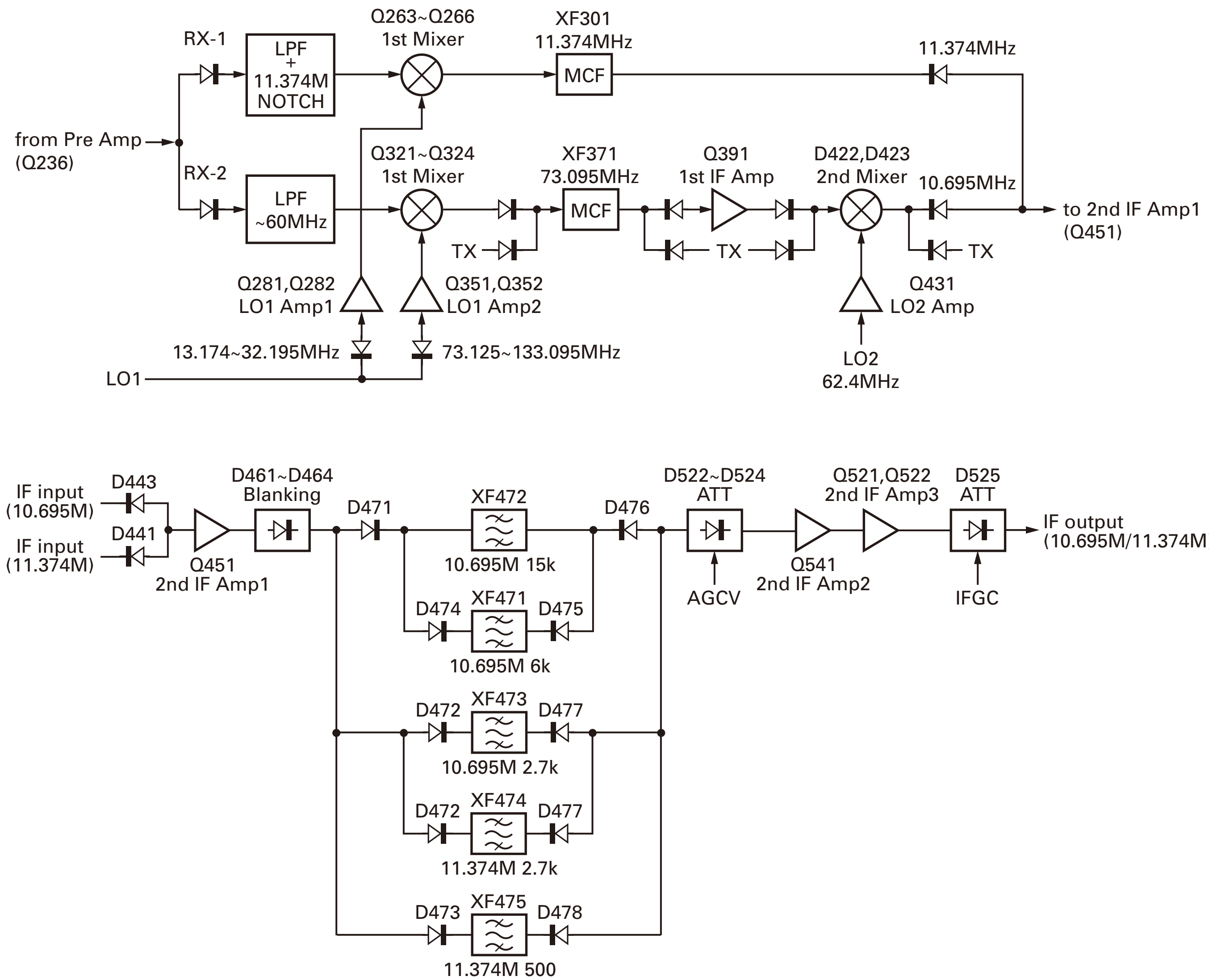


Fig. 4 From the preamplifier (Q236) to the second IF frequency (10.695MHz/11.374MHz)

■ From the second IF to the AF output

The signal that passed through D525 then goes through D526 and enters the FM wave detecting IC (IC591) in FM mode, and the AM/SSB/CW/FSK wave detecting mixer (D551, D552) in other modes.

The FM mode signal is mixed with LO3 (10.240MHz) in the FM detecting IC (IC591), and converted into the third IF (455kHz). The third IF signal passes through the ceramic filter (CF591), demodulated into audio signals, and is then amplified by the FM AF amplifier (IC592).

Signals of modes other than FM are mixed with LO3 (RX-1 path: 11.398MHz, RX-2 path: 10.719MHz) in the AM/SSB/CW/FSK wave detecting mixer (D551, D552), are converted into the third IF (24kHz), and are then amplified by the third IF amplifier (Q551).

Signals of FM mode and modes other than FM are sent from the TX-RX unit (X57-785 A/2) RIF connector (CN600) to the Control unit (X53-446 A/3)'s CN61.

The signal input into the Control unit (X53-446 A/3) is amplified in the operation amplifier (IC64, IC65), A/D conversion is carried out by the A/D converter (IC66), and then the DSP (IC301) filtering, volume control, subtone decoding, etc. are carried out. The output signal from the DSP is converted by the D/A converter (IC72), amplified as an audio signal in the AF power amplifier (IC67), and is then sent from the Control unit (X53-446 A/3) AF connector (CN65) to the TX-RX unit (X57-785 A/2) CN3, and output to the PHONES jack (J951) (first priority), EXT.SP jack (J1) (second priority), or internal speaker (third priority).

CIRCUIT DESCRIPTION

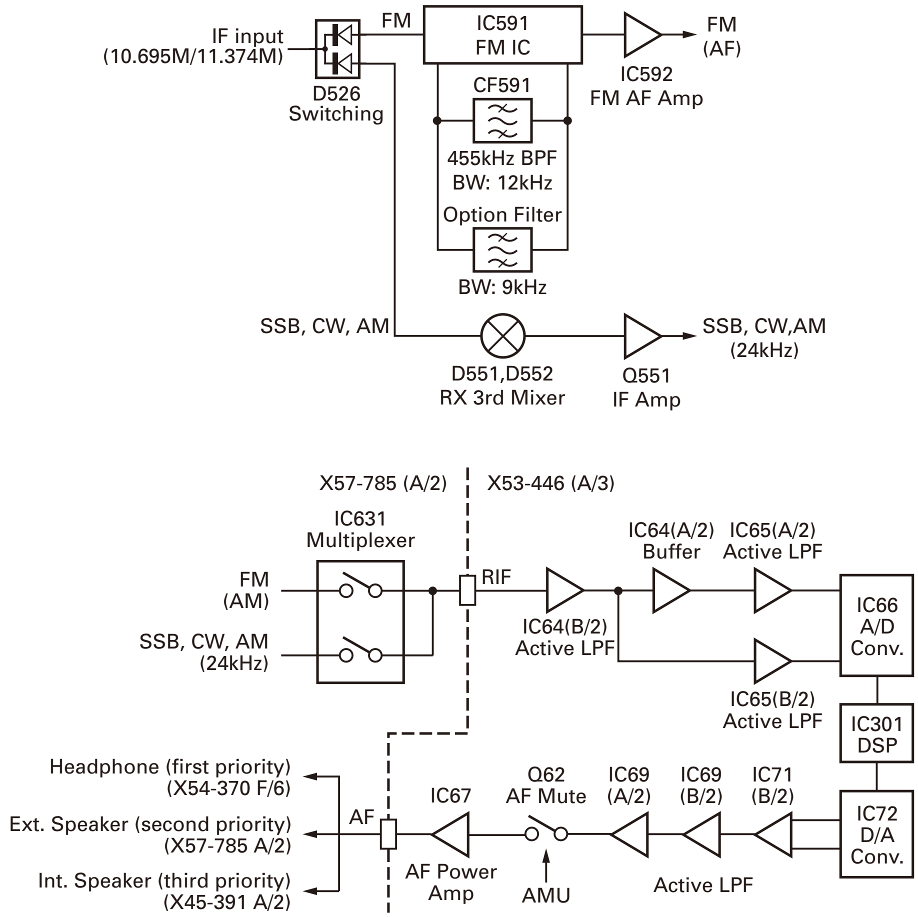


Fig. 5 From second IF to AF output

First Mixer

There are 2 types of first mixers: for IF frequency 11.374MHz RX-1 path, and for IF frequency 73.095MHz RX-2 path.

The first mixer for the RX-1 path is a quad-balance type mixer by MOS FET (Q263 to Q266), and mixes with LO1 (12.495 to 32.195MHz) which is approximately +18dBm, and converts into the first IF (11.374MHz). Approximately 2.6V bias is added to LO1 in order to suppress distortion.

The first mixer for the RX-2 path is a quad-balance type mixer by MOS FET (Q321 to Q324), and mixes with LO1 (73.120 to 133.095MHz) which is approximately +18dBm, and converts into the first IF (73.095MHz). No bias is added to this LO1.

The volume resistance (VR261, VR321) within the first mixer circuit is used to adjust mixer balance. After replacing the MOS FET (Q263~Q266, Q321~Q324), transformer (L261, L262, L264, L323, L324, L326), volume resistance (VR261, VR321), or TX-RX unit (X57-785 A/2), adjust the mixer balance in the adjustment mode.

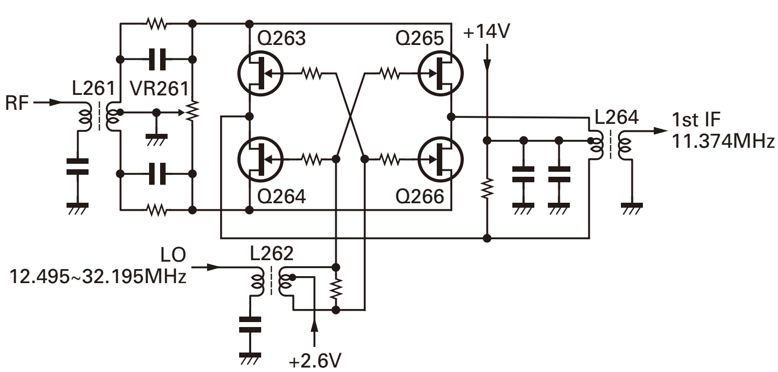


Fig. 6 First mixer circuit of the RX-1 path

CIRCUIT DESCRIPTION

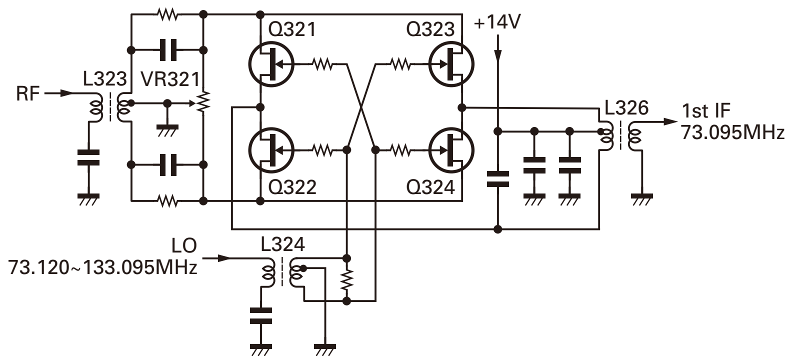


Fig. 7 First mixer circuit of the RX-2 path

MCF Adjustment

There are 2 types of MCFs: for IF frequency 11.374MHz RX-1 path, and for IF frequency 73.095MHz RX-2 path.

The RX-1 path MCF (XF301) is a filter which consists of a 2-pole MCF, whose center frequency is 11.374MHz and passband width is 6kHz. Since the XF301 terminal impedance is 1kΩ, the impedance is converted using variable coils (L301, L302).

The MCF can be adjusted by connecting a tracking generator to the MCF adjustment connector (CN301, CN302), and then rotating the variable coil (L301, L302). After replacing the MCF (XF301), variable coil (L301, L302), or TX-RX unit (X57-785 A/2), adjust the MCF in the adjustment mode.

The RX-2 path MCF (XF371) is a filter which consists of a 2-pole MCF, whose center frequency is 73.095MHz and passband width is 15kHz. Since the XF371 terminal impedance is 2.5kΩ, the impedance is converted using variable coils (L326, L374, L375, L376).

The MCF can be adjusted by connecting a tracking generator to the MCF adjustment connector (CN303, CN304), and then rotating the variable coil (L326, L374, L375, L376). After replacing the MCF (XF371), variable coil (L326, L374, L375, L376), or TX-RX unit (X57-785 A/2), adjust the MCF in the adjustment mode.

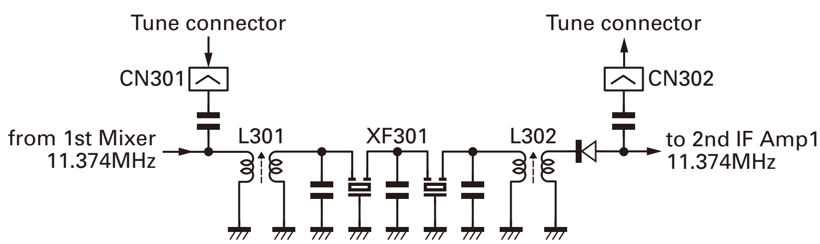


Fig. 8 RX-1 path MCF circuit

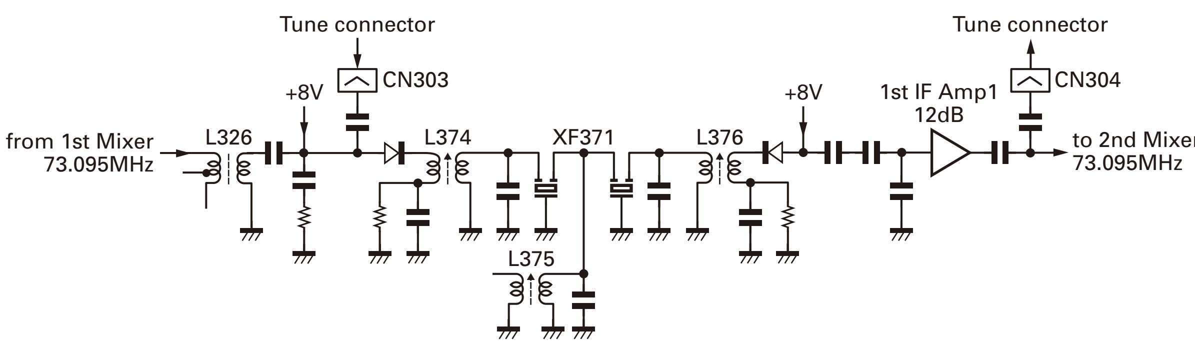


Fig. 9 RX-2 path MCF circuit

CIRCUIT DESCRIPTION

IF Filter

The IF filter includes a DSP digital filter as well as multiple analog filters in the IF stage to have sufficient tolerance for unnecessary signals.

In the RX-1 path with enhanced anti-proximate interference, the MCF (XF301) and crystal filter (XF474, XF475) are inserted for the first IF (11.374MHz). In the RX-2 path, MCF (XF371) for the first IF (73.095MHz), a crystal filter (XF473) or MCF (XF471, XF472) for the second IF (10.695MHz), and a ceramic filter (CF591) for the third IF (455kHz: FM only).

Item	XF301: L71-0656-15	XF474: L71-0657-05	XF475: L71-0658-05
Nominal center frequency	11.374MHz	11.374MHz	11.374MHz
Pass bandwidth	±3kHz or more at 6dB	±1.35kHz or more at 6dB	±250Hz or more at 6dB
Attenuation bandwidth	±17.5kHz or less at 60dB	±4kHz or less at 60dB	±0.75kHz or less at 60dB
Ripple	1dB or less	2dB or less	2dB or less
Insertion loss	3dB or less	6dB or less	Within 6±3dB
Guaranteed attenuation	70dB or more at fo±1MHz	80dB or more at fo±1MHz	80dB or more at fo±1MHz
Center frequency deviation	±500Hz at 6dB	±150Hz at 6dB	±150Hz at 6dB
Terminating impedance	1kΩ // 6pF	900Ω // 9pF	100Ω // 90pF

Item	XF371: L71-0605-05	XF472: L71-0230-15	XF471: L71-0664-05	XF473: L71-0569-15
Nominal center frequency	73.095MHz	10.695MHz	10.695MHz	10.695MHz
Pass bandwidth	±7.5kHz or more at 3dB	±7.5kHz or more at 3dB	±3kHz or more at 6dB	±1.35kHz or more at 6dB
Attenuation bandwidth	±35kHz or less at 40dB	±25kHz or less at 18dB	±40kHz or less at 60dB	±300kHz or less at 60dB
Ripple	1dB or less	0.5dB or less	2dB or less	2dB or less
Insertion loss	3dB or less	2dB or less	3dB or less	6dB or less
Guaranteed attenuation	70dB or more at fo+(500~1000kHz) 70dB or more at fo–(200~1000kHz)	30dB or more at fo±1MHz	60dB or more at fo±1MHz	60dB or more at fo±300kHz
Center frequency deviation	±1.5kHz at 3dB	-	±1kHz at 6dB	±150Hz or less at 6dB
Terminating impedance	2.5kΩ // –0.5pF	3kΩ // 2pF	1.2kΩ // 6pF	1.2kΩ // 7pF

Item	CF591: L72-0998-05
Nominal center frequency	455kHz
Pass bandwidth	±6kHz or less at 6dB
Attenuation bandwidth	±12.5kHz or less at 50dB
Ripple	2dB or less
Insertion loss	6dB or less
Guaranteed attenuation	35dB or more at fo±100kHz
Center frequency deviation	±1.0kHz
Terminating impedance	2kΩ

Table 6 IF filter

CIRCUIT DESCRIPTION

Noise Blanker Circuit (NB Circuit)

■ Noise detection circuit

The Noise detecting circuit is the circuit that removes short frequency pulse noise.

The 10.695MHz or 11.374MHz IF signal passes through the buffer (Q641) in the TX-RX unit (X57-785 A/2), and is sent from CN674 to the NB unit (X57-785 B/2) CN667 (NB IF) through a co-axial cable.

The signal input into the NB unit (X57-785 B/2) is amplified by the 4 stage amplifier (Q651, Q652, Q653, Q663, Q664, Q666), passes through the buffer (Q670), and then noise-detected by D662. This noise-detected voltage switches Q669, turns Q671 ON, attenuates the IF signal in the blanking circuit (D461 to D464) depending on the noise, and removes the pulse noise.

When long-frequency signal is input, the AGC functions and the gains of the NB amplifier 2 (Q652, Q653), NB amplifier 3 (Q663, Q664), and NB amplifier 4 (Q666) are lowered, which results in low detecting voltage, and Q671 is not turned ON. Thus, the IF signal is not attenuated. Because the AGC time constant is large, a pulse with short frequency does not let the AGC function and lower the detecting voltage, Q671 becomes ON and the blanking circuit can function.

When the NB function is turned ON, the threshold variable direct current "NBL" is added to the Q669 emitter from the D/A converter (IC13). By changing the emitter's voltage, the NB effect can be adjusted. Also, when the IF signal is 10.695MHz, Q654, Q665, and Q668 becomes ON and the NB amplifier 2, NB amplifier 3, and NB amplifier 4's tuning point changes.

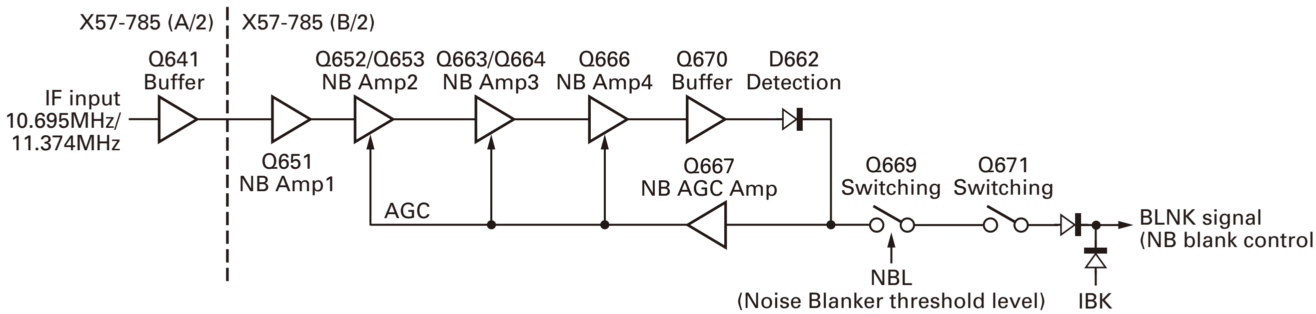


Fig. 10 Noise detection circuit

■ Blanking circuit

The Noise blanking circuit is a circuit which attenuates the IF signal by the signal detected in the noise detection circuit and removes pulse noise.

If pulse noise is not detected in the NB unit, BLNK turns to "H", Q456 turns to ON and Q455 turns to OFF. Also, diodes D461 to D464 turn OFF and the IF signal is attenuated.

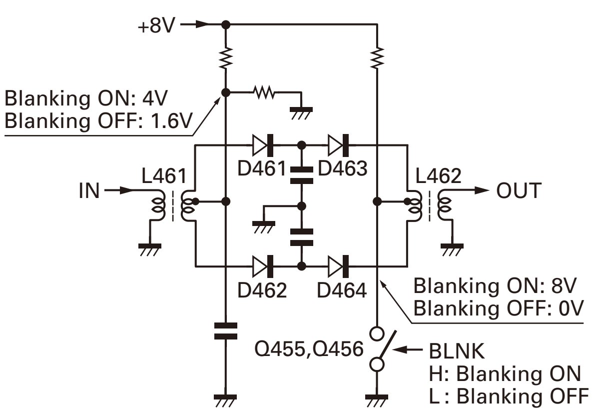


Fig. 11 Blanking circuit

Transmitter Circuit

■ From transmission signal (TIF) to drive output

The path of the transmission signal (TIF) is divided by the analog switch (IC68) in the Control unit (X53-446 A/3) in accordance with whether it's FM mode or a mode other than FM.

In FM mode, the transmission signal is switched by the analog switch (IC68), and the frequency is modulated in audio signals into the LO1 (first local oscillator signal). In modes other than FM, the transmission signal is switched by the analog switch (IC68), and then input into the balanced mixer (IC701). The 24kHz IF signal and LO3 (third local oscillator signal) are input into this balanced mixer to generate the 10.695MHz IF signal.

The 10.695MHz transmission IF signal passes through the IF filter (XF471) with the 6kHz bandwidth, and controls the transmission IF amplifier's (Q721) second gate by the ALC voltage and adjusts the gain. The pin diode (D721) operates the variable attenuator by current control, and changes the transmission IF signal gain. This variable gain provides the TGC function which controls each band's transmission gain.

CIRCUIT DESCRIPTION

The 10.695MHz transmission IF signal is converted to 73.095MHz by the mixer (D422, D423). The impedance is made variable by the current that passes through the pin diode (D741), and thus the level of the 73.095MHz transmission IF signal level changed. This level variance corrects the transmission signal gain (PGC function) at the time of power control.

The transmission signal which passed MCF (XF371) with the bandwidth 15kHz is converted to the target transmission frequency in the final transmit mixer (IC761). This MCF (XF371) helps reduce proximate spurious components. The signal from the final transmit mixer passes through the receive BPF, and is amplified to the power needed to drive the final circuit in the drive amplifier (Q783).

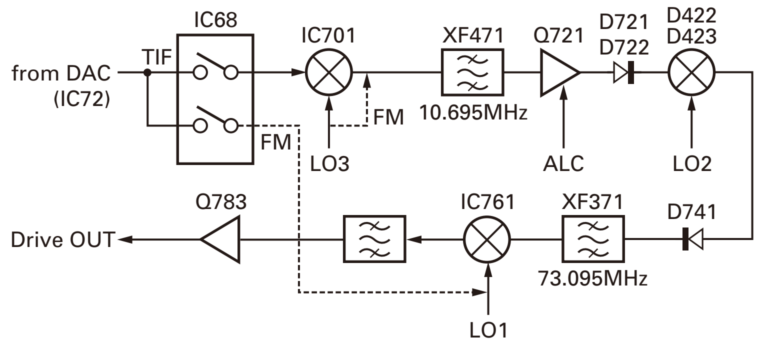


Fig. 12 From transmission signal (TIF) to drive output

■ From the drive output to the antenna terminal

The transmit signal sent from the TX-RX unit (X57-785 A/2) to the CN2 (TXRF) of the Final unit (X45-391 A/2) is amplified to the designated power in the final stage, passes through the LPF, and is then output from the antenna terminal. This unit includes a relay antenna tuner circuit that operates in all bands.

The transmit signal input into the Final unit (X45-391 A/2) CN2 is amplified by the pre-drive amplifier (Q1, Q2) and the drive amplifier (Q3, Q4). Then, the signal's high harmonic is eliminated in the LPF and the signal goes through the progressive wave/reflected wave detection circuit, amplitude phase detection circuit for the antenna tuner, transmit/receive changeover relay (K46), antenna tuner IN/THROUGH changeover relay (K45), antenna changeover relay (K44), and finally, output through the ANT1 or ANT2 antenna terminal. In order to reduce the transmit/receive changeover relay's operational noise, relays are in a separate unit (X45-391 B/2).

The antenna tuner tunes by the combination of the condenser and the coil. Its operation is the same as in previous models. IC6's phase error signal switches the input side condenser of the tuning circuit, and the IC5 amplitude difference signal switches the output side condenser. The SWR is decided by calculating the voltage of the progressive wave and the reflected wave with the main MCU (X53-446 IC306).

This model includes a current protection circuit. The current running in the final portion is converted to the potential difference of the 1mΩ resistance inserted into a power line, and the potential difference is detected at IC4. When the potential difference is larger than designated, IC4 output activates the ALC protection function. This ALC protection function controls so that the current would not exceed the predetermined value when the current at the final portion is increased for some unexpected reason. There are other protection circuits the same as the ones included in the previous models.

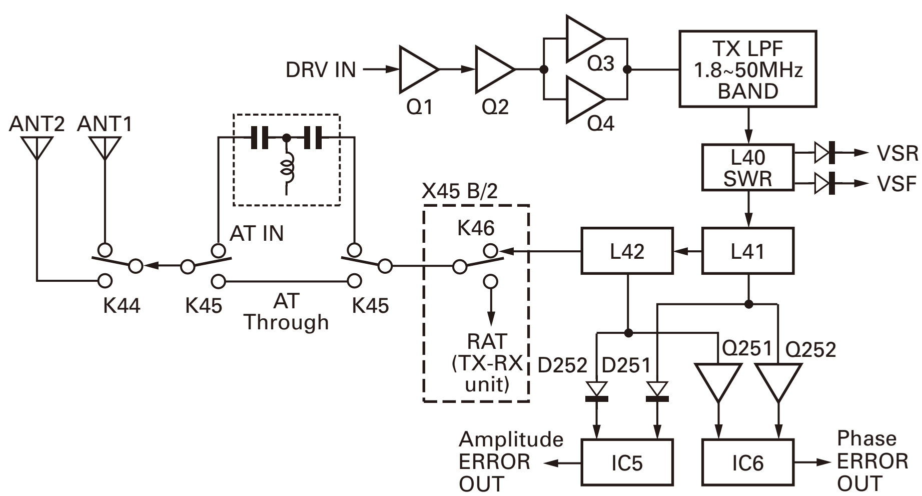


Fig. 13 From the drive output to the antenna terminal

CIRCUIT DESCRIPTION

■ Transmit power control

Transmit power control is done in the same way as in the previous models; the ALC circuit controls the ALC voltage using the progressive wave voltage (VSF) and keeps a constant output.

The voltage detected in the Final unit (X45-391 A/2) progressive wave voltage and reflection wave voltage (VSR) detection circuits is sent to the TX-RX unit's (X57-785 A/2) CN5. The progressive wave voltage is divided into a suitable voltage by the resistance, and input into the differential amplifiers consisting of Q803 and Q804.

If the progressive wave voltage rises, the emitter voltage also rises, and Q804 base current decreases and Q804 collector voltage rises. If this collector voltage exceeds approximately 2.4V (Q805's VBE and VE added), Q805's base current starts to flow, and the collector voltage where the ALC time constant CR is selected decreases. This collector voltage is buffered in Q806, the voltage is shifted in D811, and matched with the keying control voltage by Q807 and D812 to generate the ALC voltage. If the ALC voltage (2.7V when the ALC voltage is not added) goes down, the IF amplifier's (Q721) second gate voltage goes down and the gain is decreased.

When transmitting AM, Q802 is turned on approximately 20ms after transmission, and the ALC voltage is controlled with the average power. The Q804 base voltage, which would be ALC's reference voltage, is controlled by the adjustment value (POC) from the main MCU, and output from pin 5 of the D/A converter (IC13).

SWR protection is controlled by the reflection wave voltage. The reflection wave voltage is divided by the resistance and input into IC801. If it exceeds the designated voltage, IC801's output controls the ALC voltage and lowers the power.

The PWR (power) meter is amplified from the progressive wave voltage, the SWR meter is amplified from the reflection wave voltage, and the ALC meter is amplified from the ALC voltage each by the relevant operation amplifier and then input into the A/D converter and displayed on each meter.

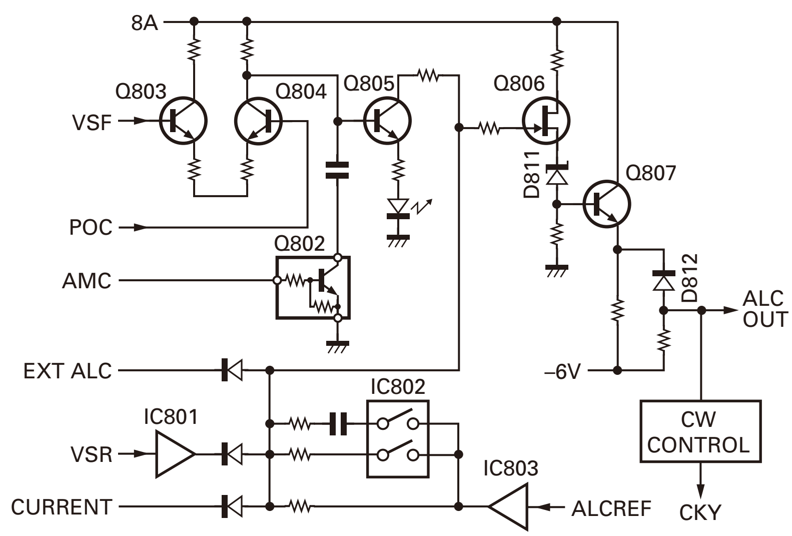


Fig. 14 Transmit power control

DAC (IC75, IC78) and ADC (IC83) Signal Path

■ Outline

DAC (IC75) communicates signals with ACC2 and the Optional unit (VGS-1). DAC (IC78) communicates signals with USB. ADC (IC83) communicates signals with ACC2/USB and the Optional unit (VGS-1). The signal path of DAC (IC75, IC78) and ADC (IC83) vary depending on each status of transmit/receive.

■ Functions relating to transmission

1) Modulation input path

Each output signal from the analog switch (IC80) passes through the active filter (IC81) and then enters ADC (IC83) and is sent to DSP (IC301).

- The signal sent from the USB (UAO) is output from pin 6 to pin 5 of the analog switch.
- The signal sent from the ACC2 (ANI) is output from pin 2 to pin 1 of the analog switch.
- The message output signal (VAO) from the Optional unit (VGS-1) passes, without going through the analog switch, through the active filter (IC82), and then input into ADC.

CIRCUIT DESCRIPTION

2) Modulation output path

The AF signal processed in DSP (IC301) is output as analog in DAC (IC75, IC78) and then amplified by the active filter (IC73, IC76).

- The signal that passed through the active filter (IC73) is sent to ACC2 output signal (ANO).
- The signal that passed through the active filter (IC76) is sent to USB output signal (UAI).

3) Recoding a message

Signals input from the microphone are processed in ADC (IC66), passed through DSP, and then enter DAC (IC75).

The signals output from DAC (IC75) pin 11 are sent to the Optional unit (VGS-1) and recorded.

■ Constant received audio recording function

1) Recording

A part of received audio signal is processed in ADC (IC66), goes through DSP (IC301), and then enters DAC (IC75). The signals output from DAC (IC75) pin 11 are sent to the Optional unit (VGS-1) and recorded. The recording level is automatically compensated to become constant and you cannot randomly change the level.

2) Playback

The output signal (VAO) from the Optional unit (VGS-1) is input into ADC (IC83), goes through DSP (IC301), and output as AF from DAC (IC72). Playback volume is controlled by DSP.

■ Other functions

1) Playing a message (monitor)

The output signal (VAO) from the Optional unit (VGS-1) is input into ADC (IC83), goes through DSP (IC301), and output as AF from DAC (IC72). Playback audio is controlled by DSP.

2) Playing a pre-recorded voice message

The above-mentioned signal path is also used for playing a pre-recorded voice message.

Digital Control Circuit

■ Outline

The digital control circuit consists of the Control unit's (X53-446 A/3) main MCU (IC306), EEPROM (IC309), reset IC (IC307), and DSP (IC301). (Refer to Fig. 15)

■ Main MCU and its periphery

The main MCU (IC306) operates at the power supply voltage of 3.3V, and the clock frequency of 22.1184MHz which is 11.0592MHz doubled in the main MCU. Around the main MCU, EEPROM for backup, power supply voltage monitoring circuit which includes a reset circuit, 3-state output buffer (IC311) for DSP control are connected. When the power supply is OFF, the mode is switched to stop mode in order to reduce the standby current.

■ Around the DSP

The DSP (IC301) operates at the power supply voltage of 3.3V and 1.25V and clock frequency of 221.184MHz which is 24.576MHz multiplied by 9 in the DSP. Around DSP, flash memory (IC302) for storing programs, and DAC (IC66, IC83) and DAC (IC72, IC75, IC78) for controlling signals are connected.

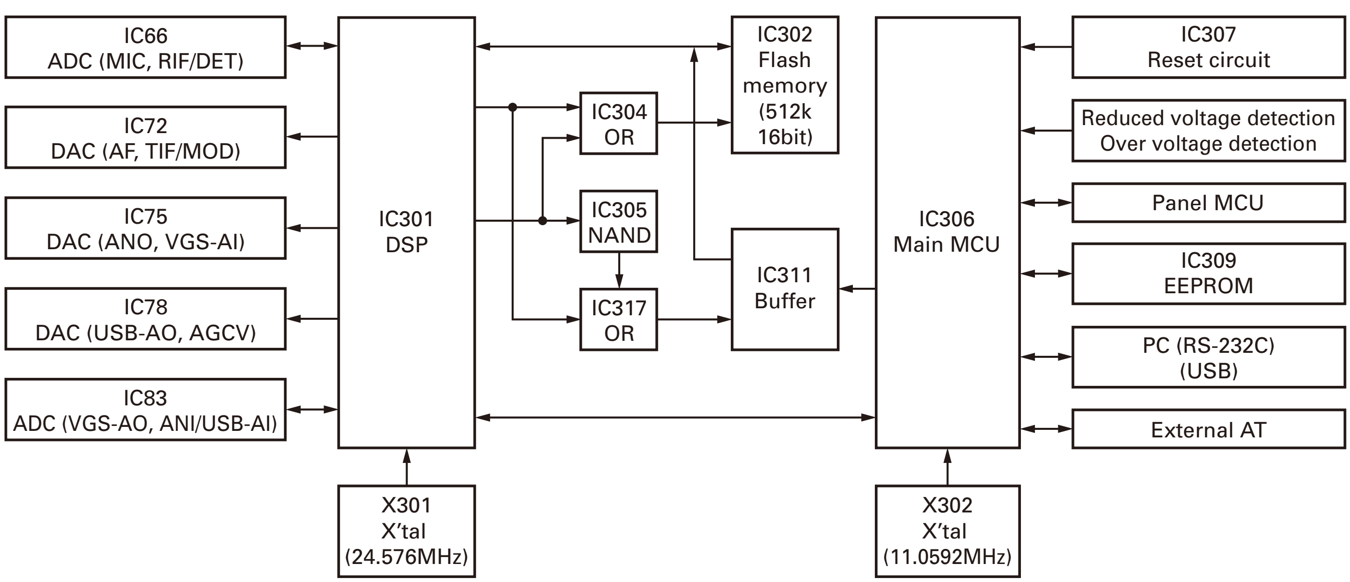


Fig. 15 Digital control circuit

CIRCUIT DESCRIPTION

Display Circuit

The Display unit (X54-370) consists of the panel MCU (IC103) and the peripheral circuits, LCD display, and LED including LCD back light. Communication with the main MCU (X53-446 IC306) is carried out in PTXD, PRXD, PCTS, PRTS. (Transmission speed: 115200bps)

■ Circuits around the panel MCU

The 33C power supply (3.3V) sent from the transceiver is used as the power supply for the digital portion. The panel MCU clock is 11.0592MHz (X101). The reset signal is controlled from the main MCU. Also, the panel MCU accepts the key matrix, various encoders, and volume.

■ LCD driver

The LCD driver used is LC75897PW (IC101). In accordance with the IC's specification, the 5V power supply for the LCD needs to be input after VDD (3.3V), a power supply switch circuit (Q102) for turning 5V ON after 3.3V occurs. In order to reliably control the power ON sequence, such control is executed by the panel MCU. (Frame frequency: 97.66Hz, duty: 1/3, bias: 1/3)

■ LED

LCD back light uses 54 LEDs for 1 color, and amber or green can be chosen by the menu. There are 5 steps of the back light luminance: 4 steps with the dimmer and OFF. Because the drive transistors (Q101, Q103, Q104, Q105) cannot be directly controlled with the panel MCU because of the quantity of LEDs, logic ICs (IC102, IC104) are used as a buffer. LCD back light's default value is amber. LED at times of transmit/receive is controlled by the panel MCU.

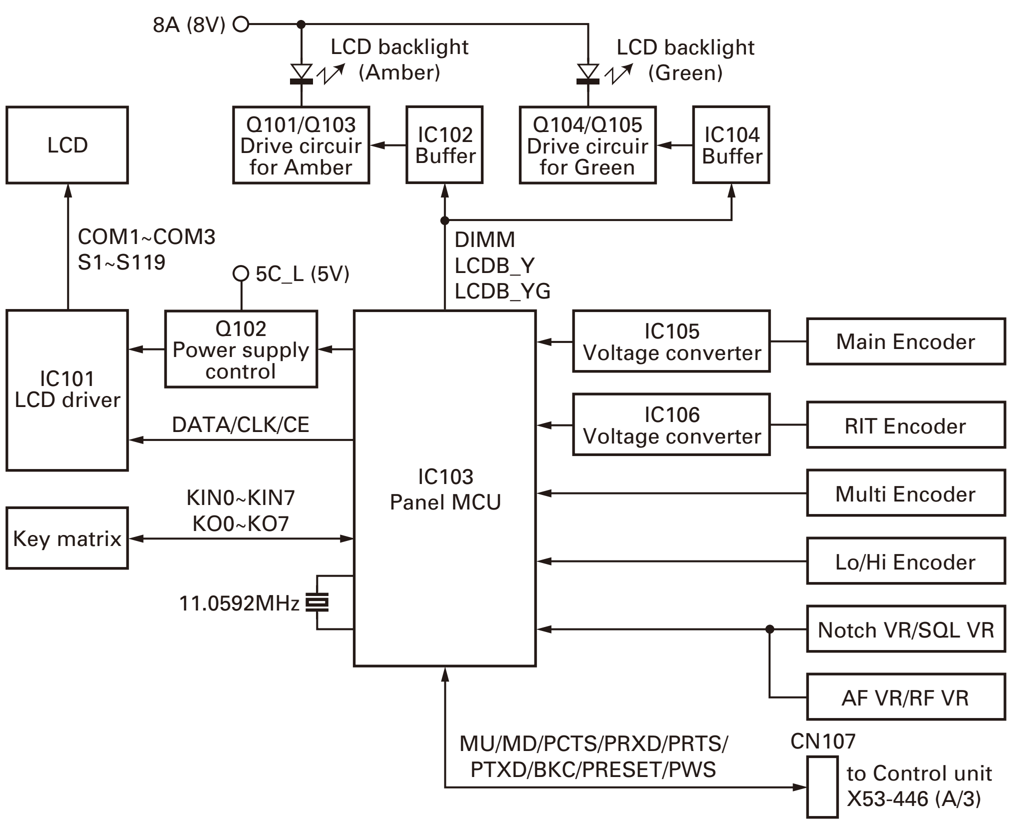


Fig. 16 Display circuit

COMPONENTS DESCRIPTION

Final unit (X45-391X-XX)

Ref. No.	Use / Function	Operation / Condition / Compatibility
IC1	Shift register	BPF switching
IC2,3	OP amplifier	VSF detection
IC4	Drain current detection	Current detection
IC5,6	OP amplifier	VSF detection
IC7	Shift register	Q1: AT switching Q2: ANT switching Q4: BPF switching Q5: FAN control Q6: FAN control Q8: AT control
IC8~10	Shift register	AT control
Q1,2	Pre-drive amplifier	HF band amplifier
Q3,4	Drive amplifier	HF band push-pull amplifier
Q5	Switching	Power supply control of 14S
Q101	Switching	Over voltage detection
Q251,252	Amplifier	VSF signal amplifier
Q253,254	Switching	Relay (K46) control
Q501~508	Switching	Filter switching depending on band
Q509,510	Switching	FAN control
Q511	Switching	Power supply control of 14S
Q513	Switching	AT control
Q514,515	Switching	Relay (K45) control
Q516	Switching	FAN control
Q517,518	Switching	AT control
Q519	Switching	Relay (K44) control
Q520	Switching	FAN control
Q521~524	Switching	AT control
Q525,526	Switching	AT relay operation stops when power is ON
Q527~544	Switching	AT control
D1,2	Attenuator	RF power control
D51,52	Protection	Surge protection
D101	Protection	Reverse connection protection
D102~110	Reverse voltage prevention	Surge protection
D111	Protection	Over voltage protection
D251~253	Detection	RF power control
D254	Protection	Surge protection
D255	Detection	RF power control
D256,257	Protection	Surge protection
D258	Switch	
D301~325	Protection	Surge protection
D501~503	Protection	Surge protection

Control unit (X53-446X-XX)

Ref. No.	Use / Function	Operation / Condition / Compatibility
IC1	3.3V switching regulator	3.3V switching regulator (Digital circuit)
IC2	8V switching regulator	8V switching regulator (Analog circuit for TX-RX, Display and Control unit)
IC3	8V AVR	8V voltage regulator (Local unit X53 B/3)
IC4	3.3V AVR	3.3V voltage regulator (Main MCU and RS-232C circuit)
IC5	5V AVR	5V voltage regulator (Analog circuit)
IC6	1.25V AVR	1.25V voltage regulator power supply (DSP)
IC61	OP amplifier	Isolation amplifier for MIC signal
IC62,63	OP amplifier	Active filter for MIC signal
IC64,65	OP amplifier	Active filter for RIF signal
IC66	A/D converter	A/D converter for MIC and RIF signal
IC67	AF amplifier	
IC68	Analog switch	FMOD and TIF signal ON/OFF switch
IC69	OP amplifier	Active filter for AF signal
IC70	OP amplifier	Active filter for FMOD and TIF signal
IC71	OP amplifier	Active filter for FMOD, TIF and AF signal
IC72	D/A converter	D/A converter for FMOD, TIF and AF signal
IC73	OP amplifier	Active filter for ANO signal
IC74	OP amplifier	Active filter for VAI signal
IC75	D/A converter	D/A converter for ANO and VAI signal
IC76	OP amplifier	Active filter for UAI signal
IC77	OP amplifier	Buffer for AGCV signal and reference voltage source
IC78	D/A converter	D/A converter for UAI and AGCV signal
IC79	OP amplifier	Active filter for AN1 signal
IC80	Analog switch	ANI and UAO signal switch
IC81	OP amplifier	Active filter for ANI and UAO signal
IC82	OP amplifier	Active filter for VAO signal
IC83	A/D converter	A/D converter for ANI, UAO and VAO signal
IC301	DSP	Digital signal
IC302	Flash memory	Program for DSP
IC304	OR gate IC	FCS control
IC305	NAND gate IC	Inverter for A(23) signal
IC306	MCU	Main microcomputer
IC307	Reset IC	MCU reset signal

COMPONENTS DESCRIPTION

Ref. No.	Use / Function	Operation / Condition / Compatibility
IC308	OR gate IC	Buffer for VBINT signal
IC309	EEPROM	
IC310	Analog multiplexer	A/D port selection of MCU
IC311	Buffer with 3-state output	Data control of DSP
IC312	Buffer	Voltage conversion: 5V → 3.3V (for TTI and TSI signal)
IC313	Buffer	Voltage conversion: 3.3V → 5V (for TTO and TSO signal)
IC314	Buffer	Buffer for CLK signal
IC315	Reset IC	BKC detection
IC316	OR gate IC	Delay time control of FOE
IC317	OR gate IC	Logic IC for IC311 control
IC501,502	Buffer	Voltage conversion: 3.3V → 5V
IC504	5V AVR	5V voltage regulator
IC505	3.3V AVR	3.3V voltage regulator
IC601	DDS	LO3 generator
IC651	Shift register	Q1: I/O update Q2: FM_TX Q3: IFB Q4: IFA Q5: BPF1 Q6: BPF2 Q7: BPF3 Q8: BPF4
IC801	PLL	LO1 reference generator
IC802	1.8V AVR	1.8V voltage regulator
IC803	DDS	LO1 generator
IC804	Amplifier	Wide band amplifier
IC901	Level converter	RS-232C level converter
IC902	OP amplifier	USB audio amplifier
IC903	CODEC	USB audio IC
IC904	AND gate	USB audio IC control
IC905	USB hub	
IC906	USB-UART bridge	
Q1~4	Switching	Power supply control of 3.3V (ON when power is ON)
Q61	Ripple filter	For audio amplifier VCC
Q62	Switching	Detection signal mute switch
Q63,64	Switching	FMOD and TIF signal ON/OFF analog switch control (IC68)
Q65	Buffer	Buffer amplifier for ANO output
Q66,67	Switching	ANI and UAO signal ON/OFF analog switch control (IC80)
Q501	Crystal oscillation circuit	Crystal oscillation circuit (15.6MHz)
Q502	Buffer	15.6MHz buffer
Q503	Doubler	Frequency doubler (15.6MHz x 2 = 31.2MHz)

Ref. No.	Use / Function	Operation / Condition / Compatibility
Q504,505	Doubler	Frequency doubler (31.2MHz x 2 = 62.4MHz)
Q506	Amplifier	LO2 output amplifier
Q601	Buffer	DDS reference buffer
Q602	Buffer	LO3 output buffer
Q651,652	Switching	BPF4 selection switch
Q653,654	Switching	IFB selection switch
Q655,656	Switching	BPF1 selection switch
Q657,658	Switching	IFA selection switch
Q659,660	Switching	BPF2 selection switch
Q661,662	Switching	BPF3 selection switch
Q663	Amplifier	LO1 output amplifier
Q664	Switching	LO1 output LPF cutoff control switch
Q801	Buffer	PLL reference buffer
Q802	Switching	FM modulation switch
Q803	Switching	PLL LPF cutoff control switch
Q804	Amplifier	PLL F-in amplifier
Q805	Filter	Ripple filter
Q806	VCO	
Q807	Amplifier	VCO amplifier
Q808	Amplifier	DDS reference amplifier
Q901	Switching	RS-232C IC power supply control switch
Q902	Switching	USB IC power supply control switch
Q903	Switching	USB audio IC active signal switch
Q904	Switching	USB-UART bridge IC active Signal Switch
D1	Switching	Catch diode for 3.3V switching regulator
D2	Switching	Catch diode for 8V switching regulator
D3~6	Voltage shift	Temperature compensation
D7~9	Reverse current prevention	For MIC data
D61	Poly-switch	Current limit
D62	Reverse current prevention	For MIC supply (8V)
D101	Mute	For AF mute
D301	6.2V zener diode	Voltage shift
D302	Reverse current prevention	For SS signal
D304	Switching	
D501	Switching	LO2 output switch
D651	Switching	IFA selection switch
D652	Doubler	DDS output frequency doubler
D653	Switching	LO1 BPF3 selection switch

COMPONENTS DESCRIPTION

Ref. No.	Use / Function	Operation / Condition / Compatibility
D654	Switching	LO1 BPF2 selection switch
D655	Switching	LO1 BPF4 selection switch
D656	Switching	BPF2/ BPF3 selection signal control
D657	Switching	LO1 BPF1/ BPF2 selection switch
D659	Switching	IFB selection switch
D660	Switching	LO1 BPF4 selection switch
D661	Switching	LO1 BPF2 selection switch
D662	Switching	LO1 BPF1/ BPF2 selection switch
D663	Switching	LO1 BPF3 selection switch
D664,665	Switching	LPF cutoff switching
D666	Switching	LO1 BPF4 selection switch
D667	Switching	IFA/ IFB selection switch
D668	Switching	LO1 BPF1 selection switch
D669	Switching	LO1 BPF3 selection switch
D670	Switching	LO1 BPF1 selection switch
D671	Switching	BPF2/ BPF3/ BPF4 selection switch
D672	Switching	BPF1/ BPF2 selection switch
D673,675,677	Switching	BPF cutoff control
D678	Switching	LO1 BPF2 selection switch
D679	Switching	LO1 BPF3 selection switch
D680,681	Switching	LO1 BPF4 selection switch
D682	Switching	LO1 BPF1 selection switch
D683	Switching	LO1 BPF3 selection switch
D801	Variable capacitance diode	FM modulation control
D802,803	Variable capacitance diode	VCO control
D901	Protection	Surge protection
D902	Protection	Voltage protection
D903	Protection	Reverse current protection

Display unit (X54-3700-00)

Ref. No.	Use / Function	Operation / Condition / Compatibility
IC101	LCD driver	
IC102	Buffer	LCD backlight dimmer control
IC103	MCU	Panel microcomputer
IC104	Buffer	LCD backlight dimmer control
IC105,106	Buffer	Voltage conversion: 5V → 3.3V
Q101	Driver	LCD backlight dimmer control
Q102	Switching	5V power supply switch
Q103~105	Driver	LCD backlight dimmer control
Q106	Driver	LED (D214, D215) control
Q107	Driver	LED (D961) control
D101~115	LED (Green)	LCD backlight
D116~122	Reverse current prevention	Key matrix
D123~160	LED (Green)	LCD backlight
D161~213	LED (Amber)	LCD backlight
D214	LED (Green)	Lights during reception
D215	LED (Red)	Lights during transmission
D216	LED (Green)	LCD backlight
D217	LED (Amber)	LCD backlight
D218	Reverse current prevention	Reduced voltage detection interrupt
D961	LED (Orange)	ON when Mulch encoder is active

TX-RX unit (X57-785X-XX)

Ref. No.	Use / Function	Operation / Condition / Compatibility
IC11	Shift register	Q1: FIL[1] "H" when 15kHz IF filter is selected Q2: FIL[2] "H" when 6kHz IF filter is selected Q3: FIL[3] "H" when 2.7kHz IF filter is selected Q4: FIL[4] "H" when 500Hz IF filter is selected Q5: RXFM "H" when RX FM mode is selected Q6: TXFM "H" when TX FM mode is selected Q7: HFRGC "H" when receiving 21.5~30MHz and PRE "H" are selected Q8: 50RGC "H" when receiving 30~60MHz and PRE "H" are selected
IC12	Shift register	Q1: DRVO "H" when drive output is selected Q2: 1STIF "H" when RX 1st IF of 73.095MHz is selected Q3: 455FIL "L" when 455kHz FM narrow filter is selected Q4: ALCS "H" when TX SSB/ AM mode are selected Q5: AMC "H" when AM TX is selected Q6: RLSW "H" when linear amplifier usage is selected in HF or 50MHz band Q7: LINEAR "H" when linear amplifier usage is selected in either band
IC13	D/A convertor	Ao1: AGC_REF AGC reference voltage Ao2: IFGC RX IF gain control voltage Ao3: ALC_REF ALC reference voltage Ao4: TGC TX band gain control voltage Ao5: POC TX power control voltage Ao6: PGC TX power gain control voltage

COMPONENTS DESCRIPTION

Ref. No.	Use / Function	Operation / Condition / Compatibility
IC13	D/A convertor	Ao7: PRO SWR protection control voltage Ao8: NBL NB level control voltage
IC14	Shift register	Q1: BPF[5] "H" when BPF of 5M band is selected Q2: BPF[4] "H" when BPF of 3.5M band is selected Q3: BPF[3] "H" when BPF of 1.8M band is selected Q4: BPF[2] "H" when BPF of BC band (522k~1.705MHz) is selected Q5: BPF[1] "H" when BPF of BC band (30~522kHz) is selected Q6: ATT "L" when attenuator is ON Q7: RXANT "H" when receiving under 30MHz and external RX antenna is ON Q8: PRE "H" when receiving preamplifier is ON
IC15	Shift register	Q1: BPF[13] "H" when BPF of 50M band is selected Q2: BPF[12] "H" when BPF of 30~60M band is selected Q3: BPF[11] "H" when BPF of 28M band is selected Q4: BPF[10] "H" when BPF of 21M band is selected Q5: BPF[9] "H" when BPF of 14M band is selected Q6: BPF[8] "H" when BPF of 11M band is selected Q7: BPF[7] "H" when BPF of 10M band is selected Q8: BPF[6] "H" when BPF of 7M band is selected
IC521	OP amplifier	A/2: AGC Voltage and AGC reference voltage amplifier B/2: Not used
IC591	RX FM IC	RX FM Detection
IC592	OP amplifier	A/2: RX FM Noise squelch voltage amplifier B/2: RX FM AF signal amplifier
IC631	Multiplexer	Receiver output, FM (AF) and SSB/ AM/ CW/ FSK (IF) changeover
IC701	TX Mixer	Transmission mixer (24kHz → 10.695MHz)
IC761	TX Mixer	Transmission mixer (73.095MHz → HF)
IC801	OP amplifier	ALC protection
IC802	Multiplexer	ALC protection time constant changeover
IC803	OP amplifier	ALC protection
IC861	OP amplifier	Amplifier for meter
Q12	Buffer	Buffer amplifier for ANO output
Q13	Switching	External squelch output (open collector)

Ref. No.	Use / Function	Operation / Condition / Compatibility
Q14	Buffer	Buffer amplifier for PKS input signal
Q15	Switching	ON when relay for HF band linear is used
Q16	Switching	ON when relay for HF band linear is transmission
Q17	Switching	ON when relay for HF band linear is used
Q101	Switching	Dedicated external RX antenna changeover relay (K101) control (ON when external RX antenna is selected)
Q102	Switching	ATT changeover relay (K102) control (OFF when ATT is ON)
Q103	Mute	Mutes reception path during transmission (ON during transmission)
Q131~143	Switching	RF BPF selection
Q236	Amplifier	Preamplifier (HF~21.5MHz: 12dB, 21.5~60MHz: 20dB)
Q239	Switching	Preamplifier gain control (ON receiving at 21.5~60MHz)
Q263~266	RX mixer	Receiving 1st mixer (HF → 11.374MHz)
Q267	Switching	Power supply control of preamplifier (ON when preamplifier is ON)
Q268	Switching	Power supply control of preamplifier (ON when preamplifier is OFF)
Q269	Switching	Power supply control of preamplifier (ON when preamplifier is ON)
Q270	Switching	Power supply control of preamplifier (ON when preamplifier is OFF)
Q271	Switching	Power supply control of RX 1st IF circuit (ON when RX 1st IF of 73.095MHz is selected)
Q272	Switching	Power supply control of RX 1st IF circuit (ON when RX 1st IF of 11.374MHz is selected)
Q273	Switching	Power supply control of RX 1st IF circuit (ON when RX 1st IF of 73.095MHz is selected)
Q274	Switching	Power supply control of RX 1st IF circuit (ON when RX 1st IF of 11.374MHz is selected)
Q281,282	Amplifier	RX LO1 amplifier (RX 1st IF of 11.374MHz is selected)
Q301	Switching	ON when RX 1st IF of 11.374MHz is selected
Q321~324	RX mixer	Receiving 1st mixer (HF → 73.095MHz)
Q351,352	Amplifier	RX LO1 amplifier (RX 1st IF of 73.095MHz is selected)
Q391	Amplifier	RX 1st IF amplifier (RX 1st IF of 73.095MHz is selected)
Q421	Switching	Gain correction between 1st IF (ON when TX or RX 1st IF of 73.095MHz are selected)

COMPONENTS DESCRIPTION

Ref. No.	Use / Function	Operation / Condition / Compatibility
Q431	Amplifier	LO2 amplifier (ON when TX or RX 1st IF of 73.095MHz are selected)
Q451	Amplifier	RX 2nd IF amplifier 1 (10.695MHz/ 11.374MHz)
Q453	Switching	Gain correction between bands (ON when receiving 21.5~30MHz and PRE "H" are selected)
Q454	Switching	Gain correction between bands (ON when receiving 30~60MHz and PRE "H" are selected)
Q455,456	Switching	ON when BLNK signal is "H"
Q471~477	Switching	IF filter selection
Q521,522	Amplifier	RX 2nd IF amplifier 3 (10.695MHz/ 11.374MHz)
Q541	Amplifier	RX 2nd IF amplifier 2 (10.695MHz/ 11.374MHz)
Q551	Amplifier	RX 3rd IF amplifier (24kHz)
Q571	Amplifier	LO3 amplifier (ON when RX AM/ SSB/ CW/ FSK mode is selected)
Q591	Switching	Power supply control of FM circuit (ON when RX FM mode is selected)
Q631	Switching	Receiver output, FM (AF) and SSB/ AM/ CW (IF) changeover multiplexer (IC631) control
Q641	Buffer	Noise blanker input buffer
Q651	Amplifier	Noise blanker IF amplifier 1 (10.695M/ 11.374MHz)
Q652,653	Amplifier	Noise blanker IF amplifier 2 (10.695MHz/ 11.374MHz) Gain is controlled according to the NB voltage
Q654	Switching	ON when Noise Blanker IF of 10.695MHz is selected
Q660~662	DC-DC oscillator	–6V generation
Q663,664	Amplifier	Noise blanker IF amplifier 3 (10.695M/ 11.374MHz) Gain is controlled according to the NB voltage
Q665	Switching	ON when Noise blanker IF of 10.695MHz is selected
Q666	Amplifier	Noise blanker IF amplifier 4 (10.695M/ 11.374MHz) Gain is controlled according to the NB voltage
Q667	Amplifier	Noise blanker AGC control amplifier
Q668	Switching	ON when noise blanker IF of 10.695MHz is selected
Q669	Switching	Audio mute signal generation
Q670	Buffer	Noise Blanker IF buffer
Q671	Switching	Audio mute signal generation
Q702	Buffer	TX IF buffer (10.695MHz)

Ref. No.	Use / Function	Operation / Condition / Compatibility
Q721	Amplifier	TX IF amplifier (10.695MHz) Gain is controlled according to the ALC voltage
Q741	Switching	Transmission IF mute control (Mute when ON)
Q742	Amplifier	TX IF amplifier (73.095MHz)
Q781	Switching	ON when drive output is selected
Q782	Switching	ON when ANT connector output is selected
Q783	Amplifier	TX drive output amplifier
Q784	Switching	Power supply control of TXB to Final unit (X45 A/2) (ON when ANT connector output is selected)
Q801	Switching	ALC protection time constant changeover switch
Q802	Switching	On in AM mode, makes it an average value type ALC
Q803~807	Amplifier	ALC amplifier
Q841	Switching	Keying control
Q842	Buffer	ALC keying control
Q861,862	Switching	Cancels the time constant for VSF and VSR voltage lines during antenna tuning
Q903~905	Switching	Power supply control of TXB (ON during transmission)
Q906,907	Switching	Power supply control of RXB (ON during reception)
Q908	Switching	Power supply control of RX 1st IF circuit (ON when RX 1st IF of 11.374MHz is selected)
Q909	Switching	Power supply control of RX 1st IF circuit (ON when RX 1st IF of 73.095MHz is selected)
Q910	Switching	Power supply control of RX 1st IF circuit (ON when RX 1st IF of 11.374MHz is selected)
Q911	Switching	Power supply control of RX 1st IF circuit (ON when RX 1st IF of 73.095MHz is selected)
Q915	Switching	Power supply control of FM circuit (ON when RX FM mode is selected)
Q916	Switching	Power supply control of 3rd IF circuit (ON when RX AM/ SSB/ CW/ FSK mode is selected)
Q917,918	Switching	Power supply control of FM circuit (ON when TX FM mode is selected)
Q920	Switching	Power supply control of RX circuit (ON during reception)
Q925	Switching	RX power supply control (ON during transmission)
D11,12	Clipper	External modulation input

COMPONENTS DESCRIPTION

Ref. No.	Use / Function	Operation / Condition / Compatibility
D13	Reverse current prevention	External standby
D14	Surge protection	ACC2 connector (5-pin SQC)
D15	Surge protection	ACC2 connector (9-pin PKS)
D17	Reverse current prevention	
D18	Surge absorption	Relay (K11)
D20~23	Reverse current prevention	Paddle/key control line
D24	Surge protection	ACC2 connector (2-pin RTTY)
D101	Surge absorption	External RX antenna terminal
D102	Surge absorption	Relay (K101)
D103	Surge absorption	Relay (K102)
D104~107	Surge absorption	Internal circuit protection
D108	Switching	RX/TX changeover, ON during reception
D109,110	Switching	ON when receiving over 1.705MHz is selected
D131	Switching	ON when BPF of 522kHz~ 1.705MHz is selected
D132	Switching	ON when BPF of 13.9~14.5MHz is selected
D133	Switching	ON when BPF of 49~54MHz is selected (TX only)
D134	Switching	ON when BPF of 6.9~7.5MHz is selected
D135	Switching	ON when BPF of 30~522kHz is selected
D136	Switching	ON when BPF of 1.705~2.5MHz is selected
D137	Switching	ON when BPF of 2.5~4.1MHz is selected
D138	Switching	ON when BPF of 4.1~6.9MHz is selected
D139	Switching	ON when BPF of 7.5~10.5MHz is selected
D140	Switching	ON when BPF of 10.5~13.9MHz is selected
D141	Switching	ON when BPF of 14.5~21.5MHz is selected
D142	Switching	ON when BPF of 21.5~30MHz is selected
D143	Switching	ON when BPF of 30~60MHz are selected
D144	Switching	ON when BPF of 522kHz~ 1.705MHz is selected
D145	Switching	ON when BPF of 30~522kHz is selected
D146	Switching	ON when BPF of 1.705~2.5MHz is selected
D147	Switching	ON when BPF of 2.5~4.1MHz is selected

Ref. No.	Use / Function	Operation / Condition / Compatibility
D148	Switching	ON when BPF of 4.1~6.9MHz is selected
D149	Switching	ON when BPF of 6.9~7.5MHz is selected
D150	Switching	ON when BPF of 7.5~10.5MHz is selected
D151	Switching	ON when BPF of 10.5~13.9MHz is selected
D152	Switching	ON when BPF of 14.5~21.5MHz is selected
D153	Switching	ON when BPF of 21.5~30MHz is selected
D154	Switching	ON when BPF of 30~60MHz are selected
D155	Switching	ON when BPF of 13.9~14.5MHz is selected
D156	Switching	ON when BPF of 49~54MHz is selected (TX only)
D231	Switching	ON when receiving preamplifier is OFF
D232	Switching	ON when receiving preamplifier is ON
D233	Switching	ON when receiving preamplifier is OFF
D234	Switching	ON when receiving preamplifier is ON
D235	Reverse current prevention	1/2: Receiving ON at 21.5~30MHz 2/2: Receiving ON at 30~60MHz
D261,281	Switching	ON when RX 1st IF of 11.374MHz is selected
D321	Switching	ON when RX 1st IF of 73.095MHz is selected
D323	Switching	1/2: RX/TX changeover, ON during reception 2/2: RX/TX changeover, ON during transmission
D351	Switching	ON when RX 1st IF of 73.095MHz is selected
D371	Switching	1/2: RX/TX changeover, ON during transmission 2/2: RX/TX changeover, ON during reception
D421	Switching	1/2: RX/TX changeover, ON during reception 2/2: RX/TX changeover, ON during transmission
D422,423	RX/TX Mixer	Receiving 2nd/ Transmission mixer (RX: 73.095MHz → 10.695MHz, TX: 10.695MHz → 73.095MHz)
D431	Switching	1/2: RX/TX changeover, ON during transmission 2/2: RX/TX changeover, ON during reception
D441	Switching	ON when RX 1st IF of 11.374MHz is selected

COMPONENTS DESCRIPTION

Ref. No.	Use / Function	Operation / Condition / Compatibility
D443	Switching	ON when RX 1st IF of 73.095MHz is selected
D461~464	Noise Blanking	ON when BLNK signal is "H"
D471	Switching	1/2: ON when 15kHz IF filter is selected 2/2: ON when 6kHz IF filter is selected
D472	Switching	1/2: ON when 10.695MHz 2.7kHz IF filter is selected 2/2: ON when 11.374MHz 2.7kHz IF filter is selected
D473	Switching	ON when 500Hz IF filter is se-lected
D474,475	Switching	1/2: RX/TX changeover, ON during reception 2/2: RX/TX changeover, ON during transmission
D476	Switching	1/2: ON when 15kHz IF filter is selected 2/2: ON when 6kHz IF filter is selected
D477	Switching	1/2: ON when 10.695MHz 2.7kHz IF filter is selected 2/2: ON when 11.374MHz 2.7kHz IF filter is selected
D478	Switching	ON when 500Hz IF filter is se-lected
D521	Voltage shift	Reference voltage of AGC control attenuator
D522~524	Attenuator	AGC control attenuator
D525	Attenuator	IF gain adjustment
D526	Switching	1/2: ON when RX FM mode is selected 2/2: ON when RX AM/ SSB/ CW/ FSK mode are selected
D551,552	RX Mixer	Receiving 3rd mixer (10.695MHz/ 11.374MHz → 24kHz)
D571	Switching	1/2: ON when RX FM mode is selected 2/2: ON when RX AM/ SSB/ CW/ FSK mode is selected
D586,587	Clipper	FM detection IC input
D660	-6V DC/DC	Stabilizes negative power source to –6V
D661	Rectifier	Creates negative voltage
D662	Detection	Noise blanker switching pulse detection
D663	Reverse current prevention	Main IBK and NB mute signal matching, main side mute when ON
D701	Switching	1/2: ON when TX AM/ SSB/ CW/ FSK mode is selected 2/2: No connection
D702	Reverse current prevention	ON during TX FM mode
D721	Attenuator	TGC control attenuator

Ref. No.	Use / Function	Operation / Condition / Compatibility
D722,723	Switching	RX/TX changeover, ON during transmission
D741	Attenuator	PGC control attenuator
D761,762	Switching	RX/TX changeover, ON during transmission
D781	Switching	1/2: ON when drive output is selected 2/2: ON when ANT connector is selected
D782	Switching	ON when transmitting over 1.705MHz
D783	Switching	ON when transmitting from 30~522kHz
D799,800	Surge absorption	Drive output terminal
D801	Power control	
D802	Reverse current prevention	External ALC voltage
D803	Reverse current prevention	VSR signal line
D806	Reverse current prevention	External ALC voltage
D807	Current protec-tion	Reduce power at over current
D808	Power control	Reduce power at high voltage
D809	Reverse current prevention	VSR signal line
D810~812	Voltage shift	Creates a reference voltage
D813	Power control	ALC signal line
D841~843	Reverse current prevention	CKY signal line
D861,862	Reverse current prevention	Meter circuit

SEMICONDUCTOR DATA

Main MCU: F3651RDFCKDTA (Control unit IC306)

Pin No.	Name	I/O	Function
1	VREF	I	A/D standard voltage input
2	AVCC	I	Analog power supply input
3	DSIN	I	DSP data input
4	DSOUT	O	DSP data output
5	DCLK	O	DSP clock
6	DSCS	O	DSP chip select
7	TDET	I	CTCSS detect signal input from DSP H: Detect
8	VMIC	I	VOX transmit (MIC) signal input from DSP H: Active
9	VANI	I	VOX transmit (ANI) signal input from DSP H: Active
10	DHLT	I	DSP check signal input H: Ready
11	DRST	O	DSP reset output L: Reset
12	UL	I	Unlock detection L: Unlock
13	BYTE	I	Single chip mode selection (Vss connection)
14	CNVSS	I	For production
15	DRET	O	Communication re-start request to DSP
16	PHDET	I	Phone jack connection detection L: Detect
17	RESET	I	For reset L: Reset
18	XOUT	O	System clock output (11.0592MHz)
19	VSS	-	GND
20	XIN	I	System clock input (11.0592MHz)
21	VCC1	-	Power supply input
22	NMI	I	Not used (VCC connection)
23	DREQ	I	Communication request from DSP
24	PWS	I	Power switch input L: Push
25	UVBINT	I	USB connection interrupt input H: Connect
26	UCTS	I	RTS signal input from USB-serial bridge
27	URXD	I	Serial data input from USB-serial bridge
28	URTS	O	RTS signal output to USB-serial bridge
29	UTXD	O	Serial data output to USB-serial bridge
30	NC	O	Not used
31	DCFV	O	Oscillator frequency output for DC/DC converter
32	ABK2	O	Audio blanking signal output for ACC2 and USB H: AF blanking
33	ABK1	O	Audio blanking signal output H: AF blanking
34,35	NC	O	Not used
36	ETXD	O	For production
37	VCC1	-	Power supply input
38	ERXD	I	For production
39	VSS	-	GND
40	SCLK	O	For production
41	BUSY	O	For production
42	PTXD	O	Serial data output for Panel MCU
43	PRXD	I	Serial data input from Panel MCU
44	PRTS	O	RTS signal output for Panel MCU
45	PCTS	I	RTS signal input from Panel MCU
46	PRST	O	Reset signal output for Panel MCU
47	TYPX	I	Type detection
48	TYPY	I	Type detection
49	TYP3	I	Type detection
50	TYP2	I	Type detection
51	TYP1	I	Type detection
52	EPM	O	For production
53	TYP0	I	Type detection
54	EEN	O	EEPROM enable
55	EDA	I	EEPROM data input
56	ECK	O	EEPROM clock
57	ESI	O	EEPROM data output
58	VEN	O	VGS-1 enable
59	VRST	O	VGS-1 reset
60	VPLY	I	VGS-1 playback signal input
61	ECE	O	For production
62	VBSY	I	VGS-1 busy signal input
63	SS	I	PTT (SS) signal input L: Transmit
64	FPRG	I	Firmware programming mode detection
65	AMU	O	Audio mute H: Mute
66	PHD	I	Phase comparison detection for AT
67	AMD	I	Amplitude comparison detection for AT
68	PSC	O	Power switch control H: Power ON
69	TCS	O	AT tuning instruction H: During AT tuning
70	SQC	O	Squelch signal H: Close, L: Open
71	PHPWS	O	Power switch control H: Power ON
72	ATPWS	O	Shift and store bus register for AT control signal H: Valid
73,74	NC	O	Not used
75	PKP	O	Crossband repeater operation instruction L: Crossband repeater operation
76	PKSR	I	Packet transmit/ Crossband transmit instruction Normal H: Transmit, Crossband repeater L: Transmit
77	KEY	I	Key down signal L: Key down
78	KYS	I	Key jack connection detection H: Key jack connection
79	DASH	I	Electronic key dash signal L: Dash ON
80	DOT	I	Electronic Key dot Signal L: Dot ON

SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
81	TTO	O	External AT control
82	TSO	O	External AT control
83	TTI	I	External AT control
84	TSI	I	External AT control
85	VCC2	I	Power supply input
86	MODSEL	O	Modulation selection L: TIF, H: FM modulation
87	VSS	-	GND
88	ANISEL	O	ACC2 audio/USB audio selection L: ACC2 audio, H: USB audio
89	BEEP	O	Beep pattern instruction H: Beep output
90	BKC	I	Reduced voltage detection interrup H→L: Interrupt
91	IBK	O	IF blanking signal output H: Blanking
92	TLN2	O	Transmit line select 2 for DSP
93	TLN1	O	Transmit line select 1 for DSP
94	TXC	O	Transmit circuit power control H: Transmit circuit power is ON
95	CKY	O	Transmit power output control H: Transmit output
96	NC	I	Not used (External pull up)
97	BOVR	I	Over voltage detection interrupt H→L: Interrupt
98	STPC	I	Interrupt for returning from sleep mode (PC control) L→H: Interrupt
99	STS	O	RS-232C IC power control H: Power ON
100	CTXD	O	Serial data output for RS-232C IC
101	CRXD	I	Serial data input from RS-232C IC
102	CRTS	O	RTS signal output for RS-232C IC
103	CCTS	I	RTS signal input from RS-232C IC
104	LDAT	O	Serial data output for Control unit (LO) (X53 B/3)
105	LCLK	O	Serial clock output for Control unit (LO) (X53 B/3)
106	LEN	O	PLL IC enable
107	DEN1	O	DDS IC (AD9951YSVZ) enable
108	DEN2	O	DDS IC (AD9835BRUZ) enable
109	SEN	O	8-bit shift and register enable (Control unit (LO) X53 B/3)
110	IEN1	O	8-bit shift and register enable (TX-RX unit X57 A/2)
111	IEN2	O	8-bit shift and register enable (TX-RX unit X57 A/2)
112	IEN3	O	D/A converter enable (TX-RX unit X57 A/2)
113	FEN2	O	8-bit shift and register enable (Final unit X45 A/2)
114	DRES	O	DDS IC (AD9951YSVZ) reset output H: Reset
115	FEN1	O	8-bit shift and register enable (Final unit X45 A/2)
116	CLK	O	Serial clock output
117	DATA	O	Serial data output
118	ADC1	O	Multiplexer control signal 1
119	ADC2	O	Multiplexer control signal 2
120	AXC	I	Multiplexer X line input
121	AYC	I	Multiplexer Y line input
122	IDT	I	Current detection
123	VDT	I	Power supply voltage detection (Not used)
124	VSF	I	Forward wave voltage
125	VSR	I	Reflected wave voltage
126	FSQL	I	Squelch voltage
127	AVSS	-	Analog GND
128	FSM	I	S-meter voltage

Panel MCU: F364AEDFBKDUA (Display unit IC103)

Pin No.	Name	I/O	Function
1,2	NC	O	Not used
3	LCD_B_U	O	LCD backlight amber L: Light
4	LCD_B_G	O	LCD backlight green L: Light
5	CHLED	O	MULTI/CH encoder LED H: Light
6	BYTE	I	Single chip mode selection (Vss con-nection)
7	CNVSS	I	For production
8,9	NC	O	Not used
10	RESET	I	For reset L: Reset
11	XOUT	O	System clock output (11.0592MHz)
12	VSS	-	GND
13	XIN	I	System clock input (11.0592MHz)
14	VCC	I	Power supply input
15	NC	I	Not used (External pull up)
16	LOENCA	I	Low cut encoder pulse A input
17	HIENCA	I	Hi cut encoder pulse A input
18	MULA	I	MULTI encoder pulse A input
19	M-ENCB	I	Main encoder pulse B input
20	M-ENCA	I	Main encoder pulse A input
21	RIT-ENCB	I	RIT encoder pulse B input
22	RIT-ENCA	I	RIT encoder pulse A input
23	NC	I	Not used (External pull down)
24	DIMMER	O	LCD backlight (PWM)
25	NC	I	Not used (External pull down)
26~28	NC	O	Not used
29	E8TXD	O	For production

SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
30	E8RXD	O	For production
31	E8CLK	O	For production
32	E8BSY	O	For production
33	TXD0	O	The serial port for connection with the main unit
34	RXD0	I	The serial port for connection with the main unit
35	RTS	O	RTS port for connection with the main unit
36	CTS	I	CTS port for connection with the main unit
37,38	NC	O	Not used
39	E8EPM	I	For production
40~43	NC	O	Not used
44	E8CE	I	For production
45~49	NC	O	Not used
50	LOENCB	I	Low cut encoder pulse B input
51	HIENCB	I	Hi cut encoder pulse B input
52	CHENCB	I	MULTI/CH encoder B input
53	LCDDATA	O	LCD driver data output
54	LCDCLK	O	LCD driver clock output
55	LCDCS	O	LCD driver chip select output
56	LCDINH	O	Segment display off control output
57	LCDPOW	O	VLCD power control H: Power supply
58,59	NC	O	Not used
60	VCC	I	Power supply input
61	NC	O	Not used
62	VSS	-	GND
63	NC	O	Not used
64~70	KO6~KO0	O	Key scan output bit 6~0
71	PBKC	I	Reduced voltage detection interrupt
72~78	NC	O	Not used
79~86	KI7~KI0	I	Key scan input bit 7~0
87,88	NC	O	Not used
89	MU	I	MIC up key input (A/D)
90	MD	I	MIC down key input (A/D)
91	NVOL	I	NOTCH volume input (A/D)
92	SVOL	I	SQ volume input (A/D)
93	AFVOL	I	AF volume input (A/D)
94	AVSS	-	Analog GND
95	RFVOL	I	RF volume input (A/D)
96	VREF	I	A/D standard voltage input
97	AVCC	I	Analog power supply input
98	NC	O	Not used
99	TXL	O	TX LED output H: Light
100	BUSYL	O	BUSY LED output H: Light

DSP: DC6726BRFPA225 (Control unit IC301)

Pin No.	Port Name	I/O	Function
1	VSS	-	GND
2	MCLKT	O	Master clock for D/A converter
3	TXC	I	Detection of Reception or Transmission
4	CKY	I	Detection of transmit or Not transmit
5	DHLT	O	DSP check signal to Main MCU
6	VSS	-	GND
7	DREQ	O	Communication request to Main MCU
8	CVDD	I	Core power supply (1.2V)
9	VMIC	O	VOX transmit (MIC) signal output to Main MCU
10	DVDD	I	I/O power supply (3.3V)
11	VANI	O	VOX transmit (ANI) signal output to Main MCU
12	TDET	O	CTCSS detection output to Main MCU
13	VSS	-	GND
14	DRST	I	DSP reset
15	VSS	-	GND
16	CVDD	I	Core power supply (1.2V)
17	CLKIN	I	GND
18	VSS	-	GND
19	TMS	I	For CN305
20	CVDD	I	Core power supply (1.2V)
21	TRST	I	For CN305
22	OSCVSS	-	Oscillator GND
23	OSCIN	I	Oscillator input
24	OSCOUT	O	Oscillator output
25	OSCVDD	I	Oscillator CVDD
26	VSS	-	GND
27	PLLHV	I	PLL DVDD (3.3V)
28	TDI	I	For CN305
29	TDO	O	For CN305
30	VSS	-	GND
31	DVDD	I	I/O power supply (3.3V)
32	EMU[0]	I/O	For CN305
33	CVDD	I	Core power supply (1.2V)
34	EMU[1]	I/O	For CN305
35	TCK	I	For CN305
36	VSS	-	GND
37	NC	O	Not used
38	WE	O	Write enable for flash memory
39	NC	O	Not used
40	VSS	-	GND
41	DQ[7]	I/O	Data bus for flash memory
42	DVDD	I	I/O power supply (3.3V)

SEMICONDUCTOR DATA

Pin No.	Port Name	I/O	Function
43	DQ[6]	I/O	Data bus for flash memory
44	CVDD	I	Core power supply (1.2V)
45	DQ[5]	I/O	Data bus for flash memory
46	DQ[4]	I/O	Data bus for flash memory
47	VSS	-	GND
48	DQ[3]	I/O	Data bus for flash memory
49	DQ[2]	I/O	Data bus for flash memory
50	DVDD	I	I/O power supply (3.3V)
51	DQ[1]	I/O	Data bus for flash memory
52	DQ[0]	I/O	Data bus for flash memory
53	CVDD	I	Core power supply (1.2V)
54	VSS	-	GND
55	DQ[15]	I/O	Data bus for flash memory
56	DQ[14]	I/O	Data bus for flash memory
57	CVDD	I	Core power supply (1.2V)
58	DQ[13]	I/O	Data bus for flash memory
59	DQ[12]	I/O	Data bus for flash memory
60	DVDD	I/O	I/O power supply (3.3V)
61	DQ[11]	I/O	Data bus for flash memory
62	VSS	-	GND
63	DQ[10]	I/O	Data bus for flash memory
64	DQ[9]	I/O	Data bus for flash memory
65	CVDD	I	Core power supply (1.2V)
66	DQ[8]	I/O	Data bus for flash memory
67	NC	O	Not used
68	DVDD	I	I/O power supply (3.3V)
69	VSS	-	GND
70,71	NC	O	Not used
72	VSS	-	GND
73	DVDD	I	I/O power supply (3.3V)
74	A[12]	O	Address bus for flash memory
75	A[10]	O	Address bus for flash memory
76	A[9]	O	Address bus for flash memory
77	CVDD	I	Core power supply (1.2V)
78	VSS	-	GND
79	A[8]	O	Address bus for flash memory
80	A[7]	O	Address bus for flash memory
81	DVDD	I	I/O power supply (3.3V)
82	VSS	-	GND
83	A[6]	O	Address bus for flash memory
84	A[5]	O	Address bus for flash memory
85	CVDD	I	Core power supply (1.2V)
86	A[4]	O	Address bus for flash memory
87	VSS	-	GND
88	A[3]	O	Address bus for flash memory

Pin No.	Port Name	I/O	Function
89	A[2]	O	Address bus for flash memory
90	CVDD	I	Core power supply (1.2V)
91	A[1]	O	Address bus for flash memory
92	DVDD	I	I/O power supply (3.3V)
93	A[11]	O	Address bus for flash memory
94	A[0]	O	Address bus for flash memory
95	VSS	-	GND
96	A[23]	O	Selection for extension I/O port
97,98	NC	O	Not used
99	VSS	-	GND
100	CS	O	Chip select for flash memory
101	CVDD	I	Core power supply (1.2V)
102	NC	O	Not used
103	DVDD	I	I/O power supply (3.3V)
104	OE	O	Output enable for flash memory
105	RYBY	I	Ready/ Busy signal for flash memory
106	VSS	-	GND
107	DSCS	I	SPI0 slave chip select for Main MCU interface
108	DCLK	I	SPI0 serial clock for Main MCU interface
109	VSS	-	GND
110	DSOUT	I	SPI0 data input for Main MCU interface
111	DSIN	O	SPI0 data output for Main MCU interface
112	DVDD	I	I/O power supply (3.3V)
113	SDTI0	I	Serial data input from A/D converter (IC66)
114	VSS	-	GND
115	SDTI1	I	Serial data input from A/D converter (IC83)
116	SDTO0	O	Serial data output for D/A converter (IC72)
117	SDTO1	O	Serial data output for D/A converter (IC75)
118	VSS	-	GND
119	SDTO2	O	Serial data output for D/A converter (IC78)
120	NC	O	Not used
121	PDN	O	Reset for A/D converter and D/A converter
122	NC	O	Not used
123	CVDD	I	Core power supply (1.2V)
124	VSS	-	GND
125	DVDD	I	I/O power supply (3.3V)
126,127	NC	O	Not used
128	CVDD	I	Core power supply (1.2V)

SEMICONDUCTOR DATA

Pin No.	Port Name	I/O	Function
129	VSS	-	GND
130	A[13]	O	Address bus for flash memory
131	A[14]	O	Address bus for flash memory
132	CVDD	I	Core power supply (1.2V)
133	VSS	-	GND
134	A[15]	O	Address bus for flash memory
135	A[16]	O	Address bus for flash memory
136	DVDD	I	I/O power supply (3.3V)
137	A[17]	O	Address bus for flash memory

Pin No.	Port Name	I/O	Function
138	A[18]	O	Address bus for flash memory
139	BCKX0RT	I	Bit clock reception
140	VSS	-	GND
141	FSX0RT	I	Frame synchronous reception
142	BCKX0RT	O	Bit clock transmission for A/D converter and D/A converter
143	MCLKR	O	Master clock for A/D converter
144	FSX0RT	O	Frame synchronous transmission for A/D converter and D/A converter

Extended I/O Port

■ Final unit (X45-391 A/2)

Pin No.	Pin name	Port name	Function	Active level	Condition
IC1: TC74HC4094AFF (Shift register) Enable: FEN1					
4	Q1	2L	1.8M LPF relay	H	$1.705 \leqq f < 2.50$ (MHz)
5	Q2	7L	7M LPF relay	H	$5.50 \leqq f < 7.50$ (MHz)
6	Q3	14L	14M LPF relay	H	$10.5 \leqq f < 14.50$ (MHz)
7	Q4	3L	3.5M LPF relay	H	$2.50 \leqq f < 4.00$ (MHz)
14	Q5	28L	24M/28M LPF relay	H	$21.50 \leqq f < 30.0$ (MHz)
13	Q6	10L	10M LPF relay	H	$7.50 \leqq f < 10.50$ (MHz)
12	Q7	21L	18M/21M LPF relay	H	$14.50 \leqq f < 21.50$ (MHz)
11	Q8	5L	5M LPF relay	H	$4.00 \leqq f < 5.50$ (MHz)
IC7: TC74HC4094AFF (Shift register) Enable: FEN1					
4	Q1	ATS	In/Through switching relay	H	L: Through, H: In
5	Q2	ANT2	HF ANT2 switching relay	L	L: ANT1, H: ANT2
6	Q3	NC			
7	Q4	50L	50M LPF relay	H	$49.0 \leqq f < 54.0$ (MHz)
14	Q5	FANL	Low speed/High speed	H	When the FAN rotates, at either low or high speed, it becomes active.
13	Q6	FANH	High speed	H	When the FAN rotates at high speed, it becomes active.
12	Q7	NC			
11	Q8	L (1)	50M coil	H	$49.0 \leqq f < 54.0$ (MHz)
IC8: TC74HC4094AFF (Shift register) Enable: FEN2					
4	Q1	CI (1)	2.5p capacitor switching	H	Phase difference correction C1 On: Active, Off: Inactive
5	Q2	CI (2)	5p capacitor switching	H	Phase difference correction C2 On: Active, Off: Inactive
6	Q3	CI (3)	10p capacitor switching	H	Phase difference correction C3 On: Active, Off: Inactive
7	Q4	CI (4)	18p capacitor switching	H	Phase difference correction C4 On: Active, Off: Inactive
14	Q5	CI (5)	39p capacitor switching	H	Phase difference correction C5 On: Active, Off: Inactive
13	Q6	CI (6)	75p capacitor switching	H	Phase difference correction C6 On: Active, Off: Inactive

SEMICONDUCTOR DATA

Pin No.	Pin name	Port name	Function	Active level	Condition
12	Q7	CI (7)	150p capacitor switching	H	Phase difference correction C7 On: Active, Off: Inactive
11	Q8	CI (8)	300p capacitor switching	H	Phase difference correction C8 On: Active, Off: Inactive
IC9: TC74HC4094AFF (Shift register) Enable: FEN1					
4	Q1	L (2)	28M coil	H	25.50 ≦ f < 30.0 (MHz)
5	Q2	L (3)	24.9M coil	H	21.50 ≦ f < 25.50 (MHz)
6	Q3	L (4)	18M/21M coil	H	14.50 ≦ f < 21.50 (MHz)
7	Q4	L (5)	14M coil	H	10.50 ≦ f < 14.50 (MHz)
14	Q5	L (6)	10M coil	H	7.50 ≦ f < 10.50 (MHz)
13	Q6	L (7)	7M coil	H	6.90 ≦ f < 7.50 (MHz)
12	Q7	L (8)	5M coil	H	4.50 ≦ f < 6.90 (MHz)
11	Q8	L (9)	3.5M coil	H	2.50 ≦ f < 4.50 (MHz)
IC10: TC74HC4094AFF (Shift register) Enable: FEN2					
4	Q1	CO(1)	2.5p capacitor switching	H	Amplitude difference correction C1 On: Active, Off: Inactive
5	Q2	CO(2)	5p capacitor switching	H	Amplitude difference correction C2 On: Active, Off: Inactive
6	Q3	CO(3)	10p capacitor switching	H	Amplitude difference correction C3 On: Active, Off: Inactive
7	Q4	CO(4)	18p capacitor switching	H	Amplitude difference correction C4 On: Active, Off: Inactive
14	Q5	CO(5)	39p capacitor switching	H	Amplitude difference correction C5 On: Active, Off: Inactive
13	Q6	CO(6)	75p capacitor switching	H	Amplitude difference correction C6 On: Active, Off: Inactive
12	Q7	CO(7)	150p capacitor switching	H	Amplitude difference correction C7 On: Active, Off: Inactive
11	Q8	CO(8)	300p capacitor switching	H	Amplitude difference correction C8 On: Active, Off: Inactive

■ Control (Local) unit (X53-446 B/3)

Pin No.	Pin name	Port name	Function	Active level	Condition
IC651: TC74HC4094AFF (Shift register) Enable: EN1					
4	Q1	L_IOUP	AD9951(DDS) data update		
5	Q2	TXFM	FM modulation switch	L	
6	Q3	IFB	IF11M selection	L	When the RX-1 is selected, it becomes active.
7	Q4	IFA	IF73M selection	L	When the RX-2 is selected, it becomes active.
14	Q5	BPF1	LO1 filter selection	L	RX-1: 1.705 ≦ f < 2.1 (MHz), RX-2: 0.03 ≦ f < 10 (MHz)
13	Q6	BPF2	LO1 filter selection	L	RX-1: 3.4 ≦ f < 4.1 (MHz), RX-2: 10 ≦ f < 16 (MHz)
12	Q7	BPF3	LO1 filter selection	L	RX-1: 6.9 ≦ f < 7.5 (MHz), RX-2: 16 ≦ f < 30 (MHz)
11	Q8	BPF4	LO1 filter selection	L	RX-1: 13.9 ≦ f < 21.5 (MHz), RX-2: 30 ≦ f < 60 (MHz)

■ TX-RX unit (X57-785 A/2)

Pin No.	Pin name	Port name	Function	Active level	Condition
IC11: TC74HC4094AFF (Shift register) Enable: IEN2					
4	Q1	FIL[1]	IF filter 15kHz	H	IF: 10.695MHz
5	Q2	FIL[2]	IF filter 6kHz	H	IF: 10.695MHz
6	Q3	FIL[3]	IF filter 2.7kHz	H/L	1st IF 10.695MHz: H, 11.374MHz: L

SEMICONDUCTOR DATA

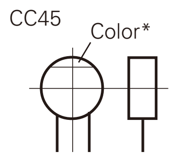
Pin No.	Pin name	Port name	Function	Active level	Condition
7	Q4	FIL[4]	IF filter 500Hz	H	IF: 11.374MHz
14	Q5	RXFM	RX mode: FM	H	
13	Q6	TXFM	TX mode: FM	H	
12	Q7	HFRGC	HF RX gain	H	21.5MHz ≦ f < 30.0MHz & Pre-AMP ON
11	Q8	50RGC	50M RX gain	H	30.0MHz ≦ f < 60MHz & Pre-AMP ON
IC12: TC74HC4094AFF (Shift register) Enable: IEN2					
4	Q1	DRVO	Drive output switch	L	
5	Q2	1STIF	1st IF switch	H/L	73.095MHz: H, 11.374MHz: L
6	Q3	455FIL	(RX) 455kHz FM filter	H/L	Wide: H, Narrow: L
7	Q4	ALCS	C810 discharge switch	H	Before AT tuning
14	Q5	AMC	AM ALC time constant switch	H/L	Slow: H, Fast: L
13	Q6	RLSW	TX-B output switch	H	Linear ON and TXB: H
12	Q7	LINEAR	Liner Relay Switch	H	Linear relay control ON: H
11	Q8	NC			
IC13: M62353AGPDF5J (D/A converter) Enable: IEN3					
15	Ao1	AGC_REF	AGC reference voltage		
2	Ao2	IFGC	RX IF gain		
3	Ao3	ALC_REF	ALC reference voltage		
4	Ao4	TGC	Transmit gain control voltage		
5	Ao5	POC	Power control voltage		
6	Ao6	PGC	RF gain control voltage		
7	Ao7	PRO	Protection control reference voltage		
10	Ao8	NBL (TX: IDP)	RX: NB threshold voltage, TX: ID threshold voltage		
IC14: TC74HC4094AFF (Shift register) Enable: IEN1					
4	Q1	BPF[5]	BPF selection	H	4.10 ≦ f < 6.90 (MHz)
5	Q2	BPF[4]	BPF selection	H	2.50 ≦ f < 4.10 (MHz)
6	Q3	BPF[3]	BPF selection	H	1.705 ≦ f < 2.50 (MHz)
7	Q4	BPF[2]	BPF selection	H	0.522 ≦ f < 1.705 (MHz)
14	Q5	BPF[1]	BPF selection	H	0.03 ≦ f < 0.522 (MHz)
13	Q6	ATT	ATT switch	L	
12	Q7	RXANT	RX ANT switch	H	f ≦ 30.0MHz & EXT RX ANT ON
11	Q8	PRE	Pre-AMP switch	H	
IC15: TC74HC4094AFF (Shift register) Enable: IEN1					
4	Q1	BPF[13]	BPF selection	H	49.0 ≦ f < 54.0 (MHz), Only TX
5	Q2	BPF[12]	BPF selection	H	30.0 ≦ f < 60.0 (MHz)
6	Q3	BPF[11]	BPF selection	H	21.5 ≦ f < 30.0 (MHz)
7	Q4	BPF[10]	BPF selection	H	14.5 ≦ f < 21.5 (MHz)
14	Q5	BPF[9]	BPF selection	H	13.9 ≦ f < 14.5 (MHz)
13	Q6	BPF[8]	BPF selection	H	10.5 ≦ f < 13.9 (MHz)
12	Q7	BPF[7]	BPF selection	H	7.50 ≦ f < 10.5 (MHz)
11	Q8	BPF[6]	BPF selection	H	6.90 ≦ f < 7.50 (MHz)

PARTS LIST

CAPACITORS

CC	45	TH	1H	220	J
1	2	3	4	5	6

1 = Type ... ceramic, electrolytic, etc.
2 = Shape ... round, square, etc.
3 = Temp. coefficient
4 = Voltage rating
5 = Value
6 = Tolerance



• Capacitor value

010 = 1pF
100 = 10pF
101 = 100pF
102 = 1000pF = 0.001μF
103 = 0.01μF

$\underset{\text{1st number}}{2}\;\underset{\text{2nd number}}{2}\;\underset{\text{Multiplier}}{0}$ = 22pF

• Temperature coefficient

1st Word	C	L	P	R	S	T	U
Color*	Black	Red	Orange	Yellow	Green	Blue	Violet
ppm/°C	0	–80	–150	–220	–330	–470	–750

2nd Word	G	H	J	K	L
ppm/°C	±30	±60	±120	±250	±500

Example : CC45TH = –470±60ppm/°C

• Tolerance (More than 10pF)

Code	C	D	G	J	K	M	X	Z	P	No code
(%)	±0.25	±0.5	±2	±5	±10	±20	+40 –20	+80 –20	+100 –0	More than 10μF : –10~+50 Less than 4.7μF : –10~+75

(Less than 10pF)

Code	B	C	D	F	G
(pF)	±0.1	±0.25	±0.5	±1	±2

• Voltage rating

1st word \ 2nd word	A	B	C	D	E	F	G	H	J	K	V
0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	–
1	10	12.5	16	20	25	31.5	40	50	63	80	35
2	100	125	160	200	250	315	400	500	630	800	–
3	1000	1250	1600	2000	2500	2150	4000	5000	6300	8000	–

• Chip capacitors

(EX)	CC	73	F	SL	1H	000	J
	1	2	3	4	5	6	7

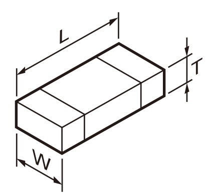
(Chip) (CH, RH, UJ, SL)

(EX)	CK	73	F	F	1H	000	Z
	1	2	3	4	5	6	7

(Chip) (B, F)

(7:) Refer to the table above.
1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Voltage rating
6 = Value
7 = Tolerance

• Dimension



Chip capacitor

Code	L	W	T
Empty	5.6±0.5	5.0±0.5	Less than 2.0
A	4.5±0.5	3.2±0.4	Less than 2.0
B	4.5±0.5	2.0±0.3	Less than 2.0
C	4.5±0.5	1.25±0.2	Less than 1.25
D	3.2±0.4	2.5±0.3	Less than 1.5
E	3.2±0.2	1.6±0.2	Less than 1.25
F	2.0±0.3	1.25±0.2	Less than 1.25
G	1.6±0.2	0.8±0.2	Less than 1.0
H	1.0±0.05	0.5±0.05	0.5±0.05

Chip resistor

Code	L	W	T
E	3.2±0.2	1.6±0.2	1.0
F	2.0±0.3	1.25±0.2	1.0
G	1.6±0.2	0.8±0.2	0.5±0.1
H	1.0±0.05	0.5±0.05	0.35±0.05

RESISTORS

• Chip resistor (Carbon)

(EX)	RD	73	E	B	2B	000	J
	1	2	3	4	5	6	7

(Chip) (B, F)

• Carbon resistor (Normal type)

(EX)	RD	14	B	B	2C	000	J
	1	2	3	4	5	6	7

1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Rating wattage
6 = Value
7 = Tolerance

• Rating wattage

Code	Wattage	Code	Wattage	Code	Wattage
1J	1/16W	2C	1/6W	3A	1W
2A	1/10W	2E	1/4W	3D	2W
2B	1/8W	2H	1/2W		

PARTS LIST

✻ New Parts. ⚠indicates safety critical components.
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

L : Scandinavia **K** : USA **P** : Canada
Y : PX (Far East, Hawaii) **T** : England **E** : Europe
C : China **X** : Australia **M** : Other Areas

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
				TS-590S	
1	1B	✻	A01-2222-01	METALLIC CABINET (UPPER)	
2	1D	✻	A01-2223-01	METALLIC CABINET (LOWER)	
3	2F	✻	A22-2525-01	SUB PANEL	
4	3F	✻	A62-1176-02	PANEL	
6	2C		B09-0355-05	CAP (DSUB-COM)	
7	3E	✻	B10-2799-02	FRONT GLASS	
8	3F	✻	B11-1879-03	ILLUMINATION GUIDE (TX/RX)	
9	3F	✻	B11-1880-03	ILLUMINATION GUIDE (MULTI)	
-			B42-5650-04	SERIAL NUMBER STICKER	
-			B42-7003-04	RATING LABEL (DC CORD)	E
-			B42-7019-04	STANDARD LABEL (FCC)	K
-			B42-7070-04	STANDARD LABEL (FCC)	K
14	3E	✻	B43-1644-04	BADGE	
15	1H	✻	B52-0622-00	SCHEMATIC DIAGRAM ACCESSORY	K
16	1H	✻	B52-0623-00	SCHEMATIC DIAGRAM ACCESSORY	K
17	1H	✻	B62-2243-00	INSTRUCTION MANUAL (ENGLISH)	
18	1H	✻	B62-2244-00	INSTRUCTION MANUAL (FRENCH)	
19	1H	✻	B62-2245-00	INSTRUCTION MANUAL (SPANISH)	E
20	1H	✻	B62-2246-00	INSTRUCTION MANUAL (GERMAN)	E
21	1H	✻	B62-2247-00	INSTRUCTION MANUAL (ITALIAN)	E
22	1H	✻	B62-2248-00	INSTRUCTION MANUAL (DUTCH)	E
24	2B		E04-0167-15	RF COAXIAL RECEPTACLE (M)	
25	1G		E07-0751-15	DIN PLUG (7P) ACCESSORY	
27	1G		E07-1351-15	DIN PLUG (13P) ACCESSORY	
28	3B		E23-1164-04	EARTH LUG (ANT)	
29	2G		E30-3489-15	DC CORD (DC SUPPLY) ACCESSORY	
30	2B	✻	E37-0891-25	LEAD WIRE WITH CONNECTOR (EXT.AT)	
31	2A		E37-0959-15	LEAD WIRE WITH CONNECTOR (SP)	
-		✻	E37-1487-05	LEAD WIRE WITH CONNECTOR (X53A-X45A)	
33	2A,3D	✻	E37-1488-05	FLAT CABLE (X57A-X45A)	
34	2A,2C	✻	E37-1489-05	FLAT CABLE (X53A-X45A)	
35	3A,2C,1F	✻	E37-1490-05	FLAT CABLE (X54A-X53A)	
36	2C,3D	✻	E37-1491-05	FLAT CABLE (X57A-X53A)	
37	2C	✻	E37-1492-05	FLAT CABLE (X53A-X53B)	
38	2A,3D	✻	E37-1493-05	LEAD WIRE WITH MINIPIN PLUG (TXRF)	
39	1A,3D	✻	E37-1494-05	LEAD WIRE WITH MINIPIN PLUG (RAT)	
40	2C,3D	✻	E37-1495-05	LEAD WIRE WITH MINIPIN PLUG (LO1)	
41	2C,3D	✻	E37-1496-05	LEAD WIRE WITH MINIPIN PLUG (LO2)	
42	2C,3D	✻	E37-1497-05	LEAD WIRE WITH MINIPIN PLUG (LO3)	
-		✻	E37-1499-05	LEAD WIRE WITH CONNECTOR (X57A-X53A)	
-		✻	E37-1500-05	LEAD WIRE WITH CONNECTOR (RIF)	
-		✻	E37-1501-05	LEAD WIRE WITH CONNECTOR (TIF)	
-		✻	E37-1502-05	LEAD WIRE WITH CONNECTOR (AF)	
-		✻	E37-1503-05	LEAD WIRE WITH CONNECTOR (PHONE)	
-		✻	E37-1505-05	LEAD WIRE WITH CONNECTOR (X57A-X57B)	
-		✻	E37-1506-05	LEAD WIRE WITH CONNECTOR (MIC)	
50	2F	✻	E37-1507-05	LEAD WIRE WITH CONNECTOR (MULTI)	
51	3A,3D	✻	E37-1530-05	LEAD WIRE WITH CONNECTOR (NBIF)	
53	3D		F09-0453-05	CAP (DIN-ACC2,REMOTE)	
54	3A		F09-0478-05	FANMOTOR	
55	1A		F10-2330-13	SHIELDING COVER (AT)	
56	1A		F10-3116-04	SHIELDING COVER (FINAL-RELAY)	
57	2B	✻	F10-3134-02	SHIELDING PLATE (FINAL)	
58	2C	✻	F10-3136-03	SHIELDING COVER (VGS-1)	
59	1G		F52-0038-05	FUSE (BLADE TYPE) (4A) ACCESSORY	
60	1G,2G		F52-0044-05	FUSE (BLADE TYPE) (25A) ACCESSORY	
62	3F		G02-0505-05	KNOB SPRING (INSIDE-KONB)	
63	2D		G02-0791-14	FLAT SPRING (X53A:AUDIO IC)	
64	3E	✻	G02-1858-03	FLAT SPRING (TORQUE)	
65	1A	✻	G02-1860-04	EARTH SPRING (HF-FINAL)	
66	3F		G09-0405-05	KNOB SPRING (ENC-KNOB)	
67	1A,1B		G10-1277-04	FIBROUS SHEET (CABINET)	
68	3E	✻	G10-1812-04	FIBROUS SHEET (TORQUE)	
69	1G		G11-2698-04	SHEET ACCESSORY	
70	3E	✻	G11-4509-04	SHEET (FRONT GLASS)	
71	2C	✻	G11-4510-04	RUBBER SHEET (X53B:DDS)	
72	1A	✻	G11-4520-04	SHEET (FINAL-RELAY)	
73	2D	✻	G11-4535-04	SHEET (X53A:DCDC-COIL)	
74	3D	✻	G11-4536-04	RUBBER SHEET (X53A PCB)	
76	2A		G13-1793-04	CUSHION (UNDER SP)	
77	2B		G13-1855-04	CUSHION (SP)	
78	2E	✻	G13-2300-04	CUSHION (LCD)	
79	1A	✻	G13-2301-04	CUSHION (TOP RELAY)	
80	1A	✻	G13-2304-04	CUSHION (RELAY)	
81	2D	✻	G13-2312-04	CUSHION (X53A:DCDC-COIL)	
82	2B	✻	G13-2341-04	CUSHION (TOP FFC)	
83	1B,2B	✻	G13-2343-04	CUSHION (TOP SHIELD)	
85	2G	✻	H10-6650-01	POLYSTYRENE FOAMED FIXTURE (F)	
86	2H	✻	H10-6651-02	POLYSTYRENE FOAMED FIXTURE (R)	
87	2H	✻	H20-1451-04	PROTECTION COVER	
88	1G		H25-0029-04	PROTECTION BAG (60/110/0.07)	
89	2G		H25-0796-04	PROTECTION BAG	
90	1G		H25-2013-04	PROTECTION BAG (80✻180 T=0.08)	
91	1H		H25-2352-04	PROTECTION BAG (250/350/0.07)	
92	3G	✻	H52-2377-02	ITEM CARTON CASE	K
92	3G	✻	H52-2378-02	ITEM CARTON CASE	E
94	1C		J02-0440-04	FOOT (FRONT)	
95	1A,1B,1D		J02-0441-15	FOOT (SIDE)	
96	1C		J02-0442-04	FOOT (FRONT)	
97	1D		J02-0475-05	FOOT (BACK)	
-			J61-0307-05	BAND	
100	1B		K01-0427-05	HANDLE	
101	3E	✻	K21-1107-13	KNOB (MAIN KNOB)	
102	3F		K29-9390-03	KNOB (INSIDE/NOTCH,AF)	
103	3F	✻	K29-9391-13	KNOB (OUTSIDE/SQL,RF)	
104	3F	✻	K29-9456-23	KNOB (MULTI)	
105	3E	✻	K29-9465-03	KNOB RING (MAIN KNOB)	
106	2F	✻	K29-9466-02	KEY TOP (8KEY)	
107	2F	✻	K29-9467-02	KEY TOP (25KEY)	
108	3F	✻	K29-9468-02	KEY TOP (20KEY)	
109	3F	✻	K29-9469-02	KEY TOP (5KEY)	
110	3F	✻	K29-9471-03	KNOB (RIT)	
111	3F	✻	K29-9477-03	KNOB (INSIDE/HI)	
112	3F	✻	K29-9478-03	KNOB (OUTSIDE/LO)	
114	1G		L79-1408-05	LINE FILTER ACCESSORY	E
A	3E	✻	N09-6602-05	SPECIAL SCREW (PANEL)	

PARTS LIST

TS-590S
FINAL UNIT (X45-391X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
B	3D		N15-1040-48	FLAT WASHER (GND)	
C	2F		N19-0673-15	SPECIAL WASHER (RIT-ENC)	
D	1F		N33-2606-43	OVAL HEAD MACHINE SCREW (X54A)	
E	3A,1B,1C,1D		N33-3006-43	OVAL HEAD MACHINE SCREW (CABINET)	
F	2C		N35-2604-43	BINDING HEAD MACHINE SCREW (X53B)	
G	1C,1D		N35-3008-41	BINDING HEAD MACHINE SCREW (FOOT)	
H	3A		N35-3020-48	BINDING HEAD MACHINE SCREW (FAN)	
J	3D		N35-4010-48	BINDING HEAD MACHINE SCREW (GND)	
K	1A,2A		N67-2608-48	PAN HEAD SEMS SCREW (FINAL-TR)	
L	3E	✻	N77-3006-43	HEXAGON SOCKET HEAD SET SCREW	
M	2A,2B,2C,3D		N87-2608-48	BRAZIER HEAD TAPTITE SCREW (PCB)	
116	1G		N99-0331-15	SCREW SET ACCESSORY	
120	2A	✻	T07-0765-25	SPEAKER	
121	2G		T91-0352-55	MICROPHONE ACCESSORY	
123	1F		W02-1836-15	ENCODER (MAIN)	
124	2F		W02-3727-05	ENCODER (RIT)	
D101-115		✻	W05-1638-00	X54A SERVICE LED (GREEN) Z	
D101-115		✻	W05-1639-00	X54A SERVICE LED (GREEN)	
D123-160		✻	W05-1638-00	X54A SERVICE LED (GREEN) Z	
D123-160		✻	W05-1639-00	X54A SERVICE LED (GREEN)	
D161-213		✻	W05-1636-00	X54A SERVICE LED (AMBER) A	
D161-213		✻	W05-1637-00	X54A SERVICE LED (AMBER)	
D216		✻	W05-1638-00	X54A SERVICE LED (GREEN) Z	
D216		✻	W05-1639-00	X54A SERVICE LED (GREEN)	
D217		✻	W05-1636-00	X54A SERVICE LED (AMBER) A	
D217		✻	W05-1637-00	X54A SERVICE LED (AMBER)	

FINAL UNIT (X45-391X-XX) 0-11: K 2-71: E

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C1		✻	CD04BQ1H220M	ELECTRO 22UF 50WV	
C2			CD04AY1E470M	ELECTRO 47UF 25WV	
C3		✻	CD04BQ1H220M	ELECTRO 22UF 50WV	
C4			CD04AZ1E471M	ELECTRO 470UF 25WV	
C5			CD04AY1E470M	ELECTRO 47UF 25WV	
C6			CD04AZ1E471M	ELECTRO 470UF 25WV	
C7			CD04AY1E470M	ELECTRO 47UF 25WV	
C15			CC73GCH1H101J	CHIP C 100PF J	
C21			CC73GCH1H470J	CHIP C 47PF J	
C22			CK73GB1H104K	CHIP C 0.10UF K	
C23			CK73GB1H103K	CHIP C 0.010UF K	
C24			CK73FB1E475K	CHIP C 4.7UF K	
C25			CK73GB1H104K	CHIP C 0.10UF K	
C27			CK73GB1H104K	CHIP C 0.10UF K	
C29			CK73GB1H103K	CHIP C 0.010UF K	
C30,31			CK73GB1H104K	CHIP C 0.10UF K	
C32			CK73GB1E105K	CHIP C 1.0UF K	
C33			CK73FB1E475K	CHIP C 4.7UF K	
C34			CC73GCH1H101J	CHIP C 100PF J	
C35			CK73GB1H103K	CHIP C 0.010UF K	
C36			CC73GCH1H221J	CHIP C 220PF J	
C37			CK73FB1E104K	CHIP C 0.10UF K	
C38			CK73GB1E105K	CHIP C 1.0UF K	
C39			CK73EB1H104K	CHIP C 0.10UF K	
C40			CK73GB1H102K	CHIP C 1000PF K	
C41			CK73FB1E104K	CHIP C 0.10UF K	
C42		✻	C93-1816-05	CHIP C 270PF J	
C43			CK73FB1H103K	CHIP C 0.010UF K	
C44		✻	C93-1815-05	CHIP C 220PF J	
C46		✻	C93-1807-05	CHIP C 0.01UF J	
C47			CK73FB1E104K	CHIP C 0.10UF K	
C48,49		✻	C93-1807-05	CHIP C 0.01UF J	
C50			CK73GB1H102K	CHIP C 1000PF K	
C51			CK73GB1H103K	CHIP C 0.010UF K	
C52			CD04BC1E221M	ELECTRO 220UF 25WV	
C53			CK73FB1C105K	CHIP C 1.0UF K	
C54,55			CK73EB1H104K	CHIP C 0.10UF K	
C56			CK73GB1H102K	CHIP C 1000PF K	
C57			CK73GB1H103K	CHIP C 0.010UF K	
C58			CK73FB1C105K	CHIP C 1.0UF K	
C59,60			CM73F2H331J	CHIP C 330PF J	
C62,63			CM73F2H471J	CHIP C 470PF J	
C64,65			CK73FB1E104K	CHIP C 0.10UF K	
C66			CK73EF1V225Z	CHIP C 2.2UF Z	
C67			CK73FB1E104K	CHIP C 0.10UF K	
C68		✻	C93-1807-05	CHIP C 0.01UF J	
C69,70			CK73FB1H102K	CHIP C 1000PF K	
C71			C93-0553-05	CHIP C 3.0PF C	
C72			CK73FB1H103K	CHIP C 0.010UF K	
C73			CK73FB1H102K	CHIP C 1000PF K	
C74			CK73FB1E104K	CHIP C 0.10UF K	
C75-77			CK73FB1H102K	CHIP C 1000PF K	
C101		✻	C93-1819-05	CHIP C 470PF J	
C102-110			CK73FB1H103K	CHIP C 0.010UF K	
C111			CK73GB1H103K	CHIP C 0.010UF K	
C112-122			CK73FB1H103K	CHIP C 0.010UF K	
C124			CK73FB1E104K	CHIP C 0.10UF K	
C126-131			CK73FB1H103K	CHIP C 0.010UF K	
C132			CK73GB1H103K	CHIP C 0.010UF K	
C133-135			CK73FB1H103K	CHIP C 0.010UF K	
C151			C93-0555-05	CHIP C 5.0PF C	
C156			C93-0568-05	CHIP C 47PF J	
C157			C93-0558-05	CHIP C 8.0PF D	
C158,159		✻	C93-1811-05	CHIP C 100PF J	
C160		✻	C93-1816-05	CHIP C 270PF J	
C161			C93-0565-05	CHIP C 27PF J	
C162		✻	C93-1816-05	CHIP C 270PF J	
C163			C93-0558-05	CHIP C 8.0PF D	
C164			C93-0567-05	CHIP C 39PF J	
C165			C93-0569-05	CHIP C 56PF J	
C166			C93-0562-05	CHIP C 15PF J	
C167		✻	C93-1820-05	CHIP C 560PF J	
C168		✻	C93-1816-05	CHIP C 270PF J	
C169			C93-0568-05	CHIP C 47PF J	
C170		✻	C93-1816-05	CHIP C 270PF J	
C171			C93-0569-05	CHIP C 56PF J	
C172		✻	C93-1811-05	CHIP C 100PF J	
C173			CK73GB1H103K	CHIP C 0.010UF K	
C174		✻	C93-1811-05	CHIP C 100PF J	
C175			C93-0565-05	CHIP C 27PF J	
C176			C93-0567-05	CHIP C 39PF J	
C177			C93-0559-05	CHIP C 9.0PF D	
C178			C93-0570-05	CHIP C 68PF J	
C179		✻	C93-1811-05	CHIP C 100PF J	
C180-182		✻	C93-1813-05	CHIP C 150PF J	
C183		✻	C93-1820-05	CHIP C 560PF J	
C184			C93-0570-05	CHIP C 68PF J	
C185			C93-0566-05	CHIP C 33PF J	
C186,187			C93-0562-05	CHIP C 15PF J	

PARTS LIST

FINAL UNIT (X45-391X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C188			C93-0571-05	CHIP C 82PF J	
C189			C93-0565-05	CHIP C 27PF J	
C190			C93-0563-05	CHIP C 18PF J	
C191			C93-0560-05	CHIP C 10PF D	
C192			C93-0570-05	CHIP C 68PF J	
C193		✻	C93-1823-05	CHIP C 1000PF J	
C194		✻	C93-1820-05	CHIP C 560PF J	
C195		✻	C93-1823-05	CHIP C 1000PF J	
C196		✻	C93-1817-05	CHIP C 330PF J	
C197		✻	C93-1815-05	CHIP C 220PF J	
C198			CK73GB1H103K	CHIP C 0.010UF K	
C199			CK73GB1H104K	CHIP C 0.10UF K	
C200			C93-0558-05	CHIP C 8.0PF D	
C201		✻	C93-1811-05	CHIP C 100PF J	
C202		✻	C93-1823-05	CHIP C 1000PF J	
C203			C93-0568-05	CHIP C 47PF J	
C204		✻	C93-1816-05	CHIP C 270PF J	
C205		✻	C93-1815-05	CHIP C 220PF J	
C206		✻	C93-1820-05	CHIP C 560PF J	
C207		✻	C93-1813-05	CHIP C 150PF J	
C208			CK73GB1H103K	CHIP C 0.010UF K	
C209		✻	C93-1811-05	CHIP C 100PF J	
C210			C93-0564-05	CHIP C 22PF J	
C211			C93-0570-05	CHIP C 68PF J	
C212			C93-0565-05	CHIP C 27PF J	
C213		✻	C93-1812-05	CHIP C 120PF J	
C214,215			C93-0569-05	CHIP C 56PF J	
C217			C93-0565-05	CHIP C 27PF J	
C218			C93-0570-05	CHIP C 68PF J	
C219			C93-0571-05	CHIP C 82PF J	
C220,221		✻	C93-1811-05	CHIP C 100PF J	
C222			C93-0554-05	CHIP C 4.0PF C	
C223			C93-0565-05	CHIP C 27PF J	
C224			C93-0568-05	CHIP C 47PF J	
C225			C93-0565-05	CHIP C 27PF J	
C226			C93-0564-05	CHIP C 22PF J	
C228		✻	C93-1819-05	CHIP C 470PF J	
C229		✻	C93-1812-05	CHIP C 120PF J	
C230,231		✻	C93-1816-05	CHIP C 270PF J	
C232			C93-0565-05	CHIP C 27PF J	
C233		✻	C93-1823-05	CHIP C 1000PF J	
C234		✻	C93-1816-05	CHIP C 270PF J	
C236		✻	C93-1816-05	CHIP C 270PF J	
C237			C93-0568-05	CHIP C 47PF J	
C238			C93-0564-05	CHIP C 22PF J	
C239			C93-0568-05	CHIP C 47PF J	
C240		✻	C93-1813-05	CHIP C 150PF J	
C241			C93-0565-05	CHIP C 27PF J	
C242			C93-0571-05	CHIP C 82PF J	
C243			C93-0563-05	CHIP C 18PF J	
C252			CK73FB1H102K	CHIP C 1000PF K	
C253,254			CK73GB1H103K	CHIP C 0.010UF K	
C255			C93-0554-05	CHIP C 4.0PF C	
C256			CC73FCH1H470J	CHIP C 47PF J	
C258,259			CK73GB1H103K	CHIP C 0.010UF K	
C260			CC73GCH1H470J	CHIP C 47PF J	
C263,264			CK73GB1H103K	CHIP C 0.010UF K	
C265			CC73GCH1H080D	CHIP C 8.0PF D	
C266			CC73GCH1H470J	CHIP C 47PF J	
C267			CK73GB1H102K	CHIP C 1000PF K	

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C269			CK73FB1H103K	CHIP C 0.010UF K	
C270			CK73GB1H103K	CHIP C 0.010UF K	
C271			C93-0554-05	CHIP C 4.0PF C	
C272			CC73FCH1H680J	CHIP C 68PF J	
C273			CK73GB1H103K	CHIP C 0.010UF K	
C275			CK73FB1H102K	CHIP C 1000PF K	
C277-280			CK73GB1H103K	CHIP C 0.010UF K	
C281,282			CK73FB1H103K	CHIP C 0.010UF K	
C283			CK73GB1H103K	CHIP C 0.010UF K	
C301			CK73FB1H102K	CHIP C 1000PF K	
C302			CK73FB1E104K	CHIP C 0.10UF K	
C303,304			CK73FB1H103K	CHIP C 0.010UF K	
C305-316			C91-3115-05	HV C 10PF 2KV	
C317-322			CK73FB1H103K	CHIP C 0.010UF K	
C323-326			C91-3115-05	HV C 10PF 2KV	
C327-332			CK73FB1H103K	CHIP C 0.010UF K	
C333,334			C91-3126-05	HV C 10PF 3KV	
C335-340			CK73FB1H103K	CHIP C 0.010UF K	
C341,342			C91-3127-05	HV C 18PF 3KV	
C343-348			CK73FB1H103K	CHIP C 0.010UF K	
C349-352			C91-3127-05	HV C 18PF 3KV	
C353-358			CK73FB1H103K	CHIP C 0.010UF K	
C359-362			C91-3123-05	HV C 150PF 3KV	
C363-368			CK73FB1H103K	CHIP C 0.010UF K	
C369,370			C91-3123-05	HV C 150PF 3KV	
C371-376			CK73FB1H103K	CHIP C 0.010UF K	
C377-380			C91-3123-05	HV C 150PF 3KV	
C381-386			CK73FB1H103K	CHIP C 0.010UF K	
C501			CK73FB1H103K	CHIP C 0.010UF K	
C502,503			CK73FB1H102K	CHIP C 1000PF K	
C504-506			CC73FCH1H101J	CHIP C 100PF J	
C507			CK73FB1H102K	CHIP C 1000PF K	
C508			CK73FB1H103K	CHIP C 0.010UF K	
C510			CK73FB1H103K	CHIP C 0.010UF K	
C511-514			CK73FB1H102K	CHIP C 1000PF K	
C515			CC73FCH1H221J	CHIP C 220PF J	
C516			CK73FB1H102K	CHIP C 1000PF K	
C517			CC73FCH1H221J	CHIP C 220PF J	
C518,519			CK73GB1H102K	CHIP C 1000PF K	
C520			CK73FB1H103K	CHIP C 0.010UF K	
C521			CC73FCH1H221J	CHIP C 220PF J	
C523,524			CC73FCH1H221J	CHIP C 220PF J	
C525-527			CK73FB1H102K	CHIP C 1000PF K	
C528			CK73GB1H102K	CHIP C 1000PF K	
C529			CK73FB1H102K	CHIP C 1000PF K	
C530			CK73GB1H102K	CHIP C 1000PF K	
C531			CK73FB1E104K	CHIP C 0.10UF K	
C532,533			CK73FB1H102K	CHIP C 1000PF K	
C534			CK73GB1H103K	CHIP C 0.010UF K	
C535-537			CC73FCH1H101J	CHIP C 100PF J	
C538,539			CK73FB1H103K	CHIP C 0.010UF K	
C540-542			CC73FCH1H101J	CHIP C 100PF J	
C543,544			CK73FB1H103K	CHIP C 0.010UF K	
C545,546			CC73GCH1H221J	CHIP C 220PF J	
C547			C93-0564-05	CHIP C 22PF J	
TC1			C05-0370-05	CERAMIC TRIMMER CAPACITOR (20P)	
CN2			E04-0154-05	PIN SOCKET	
CN3			E40-6528-05	PIN ASSY	
CN4			E40-6526-05	PIN ASSY	

PARTS LIST

FINAL UNIT (X45-391X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
CN5		✻	E40-6873-05	FLAT CABLE CONNECTOR	
CN6,7			E41-1682-05	PIN ASSY	
CN8			E40-6525-05	PIN ASSY	
CN9		✻	E40-6881-05	FLAT CABLE CONNECTOR	
CN10,11			E04-0154-05	PIN SOCKET	
CN51			E04-0190-05	PIN SOCKET	
CN52			E41-1682-05	PIN ASSY	
CN259,260			E23-1310-05	TEST TERMINAL	
CN529			E23-1310-05	TEST TERMINAL	
W1	2B	✻	E37-1480-05	LEAD WIRE WITH TERMINAL	
W2	2A	✻	E37-1508-15	LEAD WIRE WITH MINIPIN PLUG	
W3	1A	✻	E37-1479-15	LEAD WIRE WITH MINIPIN PLUG	
W6		✻	E37-1486-05	LEAD WIRE WITH CONNECTOR	
F1			F53-0391-05	FUSE (UL,CSA) (10A)	
F2		✻	F53-0401-05	FUSE (5A)	
F3			F53-0306-05	FUSE (UL,CSA) (5A)	
F4	2A		F52-0038-05	FUSE (BLADE TYPE) (4A/32V)	
CN21,22			J13-0410-05	FUSE HOLDER	
L2,3			L92-0447-05	BEADS CORE	
L4		✻	L33-1552-05	SMALL FIXED INDUCTOR (22UH)	
L5			L41-2775-33	SMALL FIXED INDUCTOR (0.027UH)	
L6,7			L92-0641-05	FERRITE CORE	
L8			L39-1434-25	TOROIDAL COIL	
L9			L39-1451-05	TOROIDAL COIL	
L10		✻	L39-1569-05	TOROIDAL COIL	
L11		✻	L34-4928-05	COIL	
L15		✻	L39-1550-05	TOROIDAL COIL	
L16			L39-0421-04	COIL	
L17		✻	L34-4925-05	AIR-CORE COIL	
L18			L39-1456-15	TOROIDAL COIL	
L19			L34-1282-05	AIR-CORE COIL	
L20		✻	L34-4926-05	AIR-CORE COIL	
L21			L39-1259-15	TOROIDAL COIL	
L22		✻	L39-1547-05	TOROIDAL COIL	
L23			L34-1282-05	AIR-CORE COIL	
L24,25			L39-1457-15	TOROIDAL COIL	
L26			L39-1221-15	TOROIDAL COIL	
L27			L39-1519-15	TOROIDAL COIL	
L28		✻	L39-1570-05	TOROIDAL COIL	
L29		✻	L39-1549-05	TOROIDAL COIL	
L30			L39-1260-15	TOROIDAL COIL	
L31		✻	L39-1546-05	TOROIDAL COIL	
L32			L39-1405-15	TOROIDAL COIL	
L33			L39-1457-15	TOROIDAL COIL	
L34			L39-1221-15	TOROIDAL COIL	
L35		✻	L34-4925-05	AIR-CORE COIL	
L36			L34-1281-05	AIR-CORE COIL	
L37			L39-1456-15	TOROIDAL COIL	
L38		✻	L34-4927-05	AIR-CORE COIL	
L39			L34-1231-15	AIR-CORE COIL	
L40			L39-0480-15	TOROIDAL COIL	
L41			L39-1442-05	TOROIDAL COIL	
L42			L39-1443-05	TOROIDAL COIL	
L43		✻	L33-1488-05	SMALL FIXED INDUCTOR (10UH)	
L44,45			L39-1440-15	TOROIDAL COIL	
L46			L34-4633-05	AIR-CORE COIL	
L47			L34-4630-05	AIR-CORE COIL	
L48,49			L34-4490-05	AIR-CORE COIL	
L50			L34-4628-05	AIR-CORE COIL	
L51,52			L34-4490-05	AIR-CORE COIL	
L53		✻	L39-1568-05	TOROIDAL COIL	
L101-109			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L251			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
L252		✻	L41-1585-32	SMALL FIXED INDUCTOR (0.15UH)	
L254			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L255			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
L257			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L259,260			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L304			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L306-308			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L310-312			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L314-316			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L318-320			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L322-324			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L326-328			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L330-332			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L334-336			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L501,502			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L503,504			L92-0641-05	FERRITE CORE	
L505-507			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L508			L41-4785-33	SMALL FIXED INDUCTOR (0.47UH)	
L509			L34-4811-05	AIR-CORE COIL	
R1			RK73EB2E101J	CHIP R 100 J 1/4W	
R2			RK73GB2A680J	CHIP R 68 J 1/10W	
R3			RK73GB2A121J	CHIP R 120 J 1/10W	
R4			RK73GB2A470J	CHIP R 47 J 1/10W	
R5			RK73GB2A471J	CHIP R 470 J 1/10W	
R6			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R7			RK73GB2A100J	CHIP R 10 J 1/10W	
R8			R92-3625-05	RESISTOR 0.1 J 0.33W	
R9			RK73FB2B221J	CHIP R 220 J 1/8W	
R10			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R11			RK73FB2B121J	CHIP R 120 J 1/8W	
R12			RK73EB2E330J	CHIP R 33 J 1/4W	
R13			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R14			RK73EB2E5R6J	CHIP R 5.6 J 1/4W	
R15,16			R92-3625-05	RESISTOR 0.1 J 0.33W	
R17			RS14DB3A151J	FL-PROOF RS 150 J 1W	
R18,19			RK73FB2B102J	CHIP R 1.0K J 1/8W	
R20,21			RS14DB3A470J	FL-PROOF RS 47 J 1W	
R22,23			RK73FB2B152J	CHIP R 1.5K J 1/8W	
R24			RK73FB2B471J	CHIP R 470 J 1/8W	
R25,26			RK73FB2B472J	CHIP R 4.7K J 1/8W	
R27-32			RK73EB2E1R0J	CHIP R 1.0 J 1/4W	
R33,34			RS14DB3D180J	FL-PROOF RS 18 J 2W	
R35			RK73FB2B471J	CHIP R 470 J 1/8W	
R36			RS14DB3A4R7J	FL-PROOF RS 4.7 J 1W	
R37		✻	R92-3632-05	RESISTOR 0.001 J 1W	
R50,51			R92-0150-05	JUMPER REST 0 OHM	
R55		✻	RS14DB3D8R2J	FL-PROOF RS 8.2 J 2W	
R56			RS14DB3D470J	FL-PROOF RS 47 J 2W	
R101			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R102			RK73GH2A152D	CHIP R 1.5K D 1/10W	
R104,105			RK73GB2A103J	CHIP R 10K J 1/10W	
R251			RK73FB2B103J	CHIP R 10K J 1/8W	
R252,253			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R254,255			RK73FB2B101J	CHIP R 100 J 1/8W	

PARTS LIST

FINAL UNIT (X45-391X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R256			RK73FB2B100J	CHIP R 10 J 1/8W	
R257,258			RK73GB2A104J	CHIP R 100K J 1/10W	
R259,260			RK73GB2A103J	CHIP R 10K J 1/10W	
R261,262			RK73GB2A471J	CHIP R 470 J 1/10W	
R263,264			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R265,266			RK73RB2H330J	CHIP R 33 J 1/2W	
R267,268			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R269			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R270			RK73FB2B103J	CHIP R 10K J 1/8W	
R271			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R272			RK73GB2A223J	CHIP R 22K J 1/10W	
R273			R92-1316-05	CHIP R 39 J 1W	
R274,275			RK73GB2A103J	CHIP R 10K J 1/10W	
R276			RK73FB2B101J	CHIP R 100 J 1/8W	
R277			RK73GB2A223J	CHIP R 22K J 1/10W	
R278,279			RK73FB2B101J	CHIP R 100 J 1/8W	
R280-283			RK73FB2B104J	CHIP R 100K J 1/8W	
R284			RK73GB2A103J	CHIP R 10K J 1/10W	
R285			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R501-503			RK73FB2B101J	CHIP R 100 J 1/8W	
R513-515			RK73GB2A101J	CHIP R 100 J 1/10W	
R518,519			RK73GB2A101J	CHIP R 100 J 1/10W	
R520			RK73PB2H2R2J	CHIP R 2.2 J 1/2W	
R521			RK73GB2A223J	CHIP R 22K J 1/10W	
R522			RK73GB2A103J	CHIP R 10K J 1/10W	
R523,524			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R525-527			RK73FB2B101J	CHIP R 100 J 1/8W	
R528			RK73GB2A104G	CHIP R 100K G 1/10W	
R529			RK73GB2A103J	CHIP R 10K J 1/10W	
R530-532			RK73FB2B101J	CHIP R 100 J 1/8W	
R533-536			RK73EB2E000J	CHIP R 0.0 J 1/4W	
R540,541			RK73GB2A221J	CHIP R 220 J 1/10W	
R542			RK73FB2B101J	CHIP R 100 J 1/8W	
R543,544			RK73GB2A100J	CHIP R 10 J 1/10W	
VR1,2		✻	R12-6736-05	TRIMMING POT. (2.2K)	
VR3,4			R12-6740-05	TRIMMING POT. (10K)	
VR5			R12-6742-05	TRIMMING POT. (22K)	
K1,2			S51-1420-05	RELAY	
K3-9			S76-0423-05	RELAY	
K10			S51-1420-05	RELAY	
K11-16			S76-0423-05	RELAY	
K17			S51-1420-05	RELAY	
K18			S76-0423-05	RELAY	
K19,20			S76-0415-05	RELAY	
K21,22			S76-0460-05	RELAY	
K23			S76-0415-05	RELAY	
K24,25			S76-0460-05	RELAY	
K26			S76-0415-05	RELAY	
K27,28			S76-0460-05	RELAY	
K29			S76-0415-05	RELAY	
K30,31			S76-0460-05	RELAY	
K32			S76-0415-05	RELAY	
K33,34			S76-0460-05	RELAY	
K35			S76-0415-05	RELAY	
K36,37			S76-0460-05	RELAY	
K38			S76-0415-05	RELAY	
K39,40			S76-0460-05	RELAY	
K41			S76-0415-05	RELAY	
K42,43			S76-0460-05	RELAY	
K44,45			S76-0424-05	RELAY	
K46			S76-0402-05	RELAY	
D1,2			DAN202U	DIODE	
D51,52			DSA301LA	DIODE	
D101			Z5W27V	SURGE ABSORBER	
D102			DAN202U	DIODE	
D103-108		✻	MC2858-T111	DIODE	
D109			DAN202U	DIODE	
D110		✻	MC2858-T111	DIODE	
D111		✻	DZ2S160M	ZENER DIODE	
D251,252			HSM88ASR-E	DIODE	
D253			1SS348-F	DIODE	
D254		✻	MC2858-T111	DIODE	
D255			1SS348-F	DIODE	
D256			DAN202U	DIODE	
D257		✻	MC2858-T111	DIODE	
D258			EDZ5.1B	ZENER DIODE	
D301,302		✻	MC2858-T111	DIODE	
D303-306			DAN202U	DIODE	
D307,308		✻	MC2858-T111	DIODE	
D309,310			DAN202U	DIODE	
D311		✻	MC2858-T111	DIODE	
D312-315			DAN202U	DIODE	
D316,317		✻	MC2858-T111	DIODE	
D318,319			DAN202U	DIODE	
D320		✻	MC2858-T111	DIODE	
D321,322			DAN202U	DIODE	
D323		✻	MC2858-T111	DIODE	
D324,325			DAN202U	DIODE	
D501			DAN202U	DIODE	
D502,503			DA221	DIODE	
IC1			TC74HC4094AFF	MOS-IC	
IC2,3			TC7SHU04F-F	MOS-IC	
IC4		✻	INA193AIDBVT	ANALOGUE IC	
IC5			TA75S393F-F	MOS-IC	
IC6			TC7WH74FU-F	MOS-IC	
IC7-10			TC74HC4094AFF	MOS-IC	
Q1			RD06HHF1-102	FET	
Q2			RD16HHF1-102	FET	
Q3,4			RD100HHF1-102	FET	
Q5		✻	TPCA8104	FET	
Q101			2SC5383-T111	TRANSISTOR	
Q251,252		✻	2SK1740-4	FET	
Q253		✻	RT5P431C-T112	TRANSISTOR	
Q254			2SC5383-T111	TRANSISTOR	
Q501-508		✻	RT1N234U-T111	TRANSISTOR	
Q509,510		✻	RT5P431C-T112	TRANSISTOR	
Q511		✻	RT1N234U-T111	TRANSISTOR	
Q513		✻	RT1N234U-T111	TRANSISTOR	
Q514		✻	RT5P431C-T112	TRANSISTOR	
Q515-524		✻	RT1N234U-T111	TRANSISTOR	
Q525,526		✻	INK0010AU1-T1	FET	
Q527-544		✻	RT1N234U-T111	TRANSISTOR	
TH1			NCP18XH103F0S	THERMISTOR	

PARTS LIST

CONTROL UNIT (X53-446X-XX)

Ref. No.	Address	New parts	Parts No.	Description			Desti-nation
CONTROL UNIT (X53-446X-XX) 0-11: K 2-71: E							
C1			CK73GB1H104K	CHIP C	0.10UF	K	
C2			CK73EB1E225K	CHIP C	2.2UF	K	
C3,4		✻	CD04BQ1V101M	ELECTRO	100UF	35WV	
C5-7			CK73EB1E225K	CHIP C	2.2UF	K	
C8			CK73GB1H102K	CHIP C	1000PF	K	
C9			CK73GB1A474K	CHIP C	0.47UF	K	
C10			CK73GB1C225K	CHIP C	2.2UF	K	
C11			CC73GCH1H101J	CHIP C	100PF	J	
C12			CK73EB1E225K	CHIP C	2.2UF	K	
C13			CC73GCH1H471J	CHIP C	470PF	J	
C14-16			CK73EB1E106K	CHIP C	10UF	K	
C17			CK73GB1H104K	CHIP C	0.10UF	K	
C18-21		✻	CD04BQ1V101M	ELECTRO	100UF	35WV	
C22-24			CK73EB1E225K	CHIP C	2.2UF	K	
C25			CK73GB1H102K	CHIP C	1000PF	K	
C26			CK73GB1A474K	CHIP C	0.47UF	K	
C27			CK73GB1C225K	CHIP C	2.2UF	K	
C28			CC73GCH1H101J	CHIP C	100PF	J	
C30			CC73GCH1H471J	CHIP C	470PF	J	
C31-33			CK73EB1E106K	CHIP C	10UF	K	
C34			CK73GB1H104K	CHIP C	0.10UF	K	
C35,36		✻	CD04BQ1V101M	ELECTRO	100UF	35WV	
C37			CK73GB1H103K	CHIP C	0.010UF	K	
C38			CK73GB1E105K	CHIP C	1.0UF	K	
C39			CK73EB1A106K	CHIP C	10UF	K	
C41			CK73GB1H104K	CHIP C	0.10UF	K	
C42			CK73GB1E105K	CHIP C	1.0UF	K	
C43			CK73GB1H104K	CHIP C	0.10UF	K	
C44			C92-0889-05	ELECTRO	330UF	6.3WV	
C45			CK73GB1H104K	CHIP C	0.10UF	K	
C46			CK73GB1E105K	CHIP C	1.0UF	K	
C47			CK73GB1H104K	CHIP C	0.10UF	K	
C48			CE32CL1C470M	CHIP EL	47UF	16WV	
C49			CK73GB1H104K	CHIP C	0.10UF	K	
C50			CK73GB1H102K	CHIP C	1000PF	K	
C51			CK73GB1H104K	CHIP C	0.10UF	K	
C52-54			CK73EB1E106K	CHIP C	10UF	K	
C55-62			CK73GB1E105K	CHIP C	1.0UF	K	
C63,64			CK73GB1H104K	CHIP C	0.10UF	K	
C65			CK73GB1E105K	CHIP C	1.0UF	K	
C66-69			CK73GB1H102K	CHIP C	1000PF	K	
C70			CK73GB1A105K	CHIP C	1.0UF	K	
C71-77			CK73GB1H102K	CHIP C	1000PF	K	
C78			CK73GB1E105K	CHIP C	1.0UF	K	
C79			CK73GB1H102K	CHIP C	1000PF	K	
C80			CK73FB0J106K	CHIP C	10UF	K	
C81			CK73GB1H102K	CHIP C	1000PF	K	
C82			CK73FB0J106K	CHIP C	10UF	K	
C83			CK73GB1E105K	CHIP C	1.0UF	K	
C84-86			CK73GB1H102K	CHIP C	1000PF	K	
C87			CK73GB1E105K	CHIP C	1.0UF	K	
C88			CK73GB1H102K	CHIP C	1000PF	K	
C90-93			CK73GB1H102K	CHIP C	1000PF	K	
C96,97			CD04AZ1E471M	ELECTRO	470UF	25WV	
C98,99			CK73FB1E104K	CHIP C	0.10UF	K	
C100			CK73GB1H223K	CHIP C	0.022UF	K	
C102			CK73GB1H104K	CHIP C	0.10UF	K	
C104			CK73GB1H103K	CHIP C	0.010UF	K	
C106			CK73GB1H223K	CHIP C	0.022UF	K	
C107			CK73GB1H104K	CHIP C	0.10UF	K	
C109			CK73GB1E105K	CHIP C	1.0UF	K	
C110			CK73GB1H332K	CHIP C	3300PF	K	
C111,112			CK73GB1H104K	CHIP C	0.10UF	K	
C113			CK73GB1H152K	CHIP C	1500PF	K	
C114,115			CK73GB1E105K	CHIP C	1.0UF	K	
C116			CK73GB1H103K	CHIP C	0.010UF	K	
C117,118			CK73GB1H222K	CHIP C	2200PF	K	
C119,120			CK73GB1H104K	CHIP C	0.10UF	K	
C121,122			CC73GCH1H471J	CHIP C	470PF	J	
C123			CK73GB1H103K	CHIP C	0.010UF	K	
C126			CK73FB0J106K	CHIP C	10UF	K	
C127			CK73GB1H104K	CHIP C	0.10UF	K	
C128			CK73GB1H122K	CHIP C	1200PF	K	
C129			CK73GB1H104K	CHIP C	0.10UF	K	
C130			CC73GCH1H560J	CHIP C	56PF	J	
C131,132			CK73FB0J106K	CHIP C	10UF	K	
C133			CK73GB1H103K	CHIP C	0.010UF	K	
C134,135			CC73GCH1H821J	CHIP C	820PF	J	
C136,137			CK73GB1H104K	CHIP C	0.10UF	K	
C138,139			CC73GCH1H121J	CHIP C	120PF	J	
C140			CK73GB1H103K	CHIP C	0.010UF	K	
C145			CK73GB1H104K	CHIP C	0.10UF	K	
C146			CK73FB0J106K	CHIP C	10UF	K	
C147			CK73GB1H104K	CHIP C	0.10UF	K	
C148			CK73FB0J106K	CHIP C	10UF	K	
C149			CC73GCH1H470J	CHIP C	47PF	J	
C150			CK73GB1H222K	CHIP C	2200PF	K	
C151			CK73GB1C224K	CHIP C	0.22UF	K	
C152,153			CK73GB1H104K	CHIP C	0.10UF	K	
C154,155			CK73FB0J106K	CHIP C	10UF	K	
C156			CD04AZ1E221M	ELECTRO	220UF	25WV	
C157			CD04AZ1E471M	ELECTRO	470UF	25WV	
C158		✻	C90-4155-05	ELECTRO	1000UF	16WV	
C159			CK73GB1H104K	CHIP C	0.10UF	K	
C160			CE32CL1H4R7M	CHIP EL	4.7UF	50WV	
C161			CK73GB1H473K	CHIP C	0.047UF	K	
C162			CK73GB1E105K	CHIP C	1.0UF	K	
C163			CK73GB1H182K	CHIP C	1800PF	K	
C164			CK73GB1H103K	CHIP C	0.010UF	K	
C166			CK73GB1C225K	CHIP C	2.2UF	K	
C167			CK73GB1H222K	CHIP C	2200PF	K	
C168			CK73GB1H122K	CHIP C	1200PF	K	
C169,170			CK73GB1H104K	CHIP C	0.10UF	K	
C171			CC73GCH1H331J	CHIP C	330PF	J	
C172			CC73GCH1H470J	CHIP C	47PF	J	
C173			CK73GB1C225K	CHIP C	2.2UF	K	
C174			CK73GB1E105K	CHIP C	1.0UF	K	
C175			CC73GCH1H331J	CHIP C	330PF	J	
C176			CC73GCH1H101J	CHIP C	100PF	J	
C177,178			CK73GB1H103K	CHIP C	0.010UF	K	
C179,180			CK73GB1H104K	CHIP C	0.10UF	K	
C181			CK73GB1H222K	CHIP C	2200PF	K	
C182			CC73GCH1H681J	CHIP C	680PF	J	
C183			CK73GB1C225K	CHIP C	2.2UF	K	
C184			CK73GB1E105K	CHIP C	1.0UF	K	
C185			CK73GB1H103K	CHIP C	0.010UF	K	
C186			CC73GCH1H221J	CHIP C	220PF	J	
C187			CC73GCH1H681J	CHIP C	680PF	J	

PARTS LIST

CONTROL UNIT (X53-446X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C188			CC73GCH1H680J	CHIP C 68PF J	
C189			CC73GCH1H101J	CHIP C 100PF J	
C190			CK73GB1H152K	CHIP C 1500PF K	
C191			CC73GCH1H331J	CHIP C 330PF J	
C192			CK73GB1H104K	CHIP C 0.10UF K	
C193			CK73FB0J106K	CHIP C 10UF K	
C196			CK73GB1H102K	CHIP C 1000PF K	
C197			CK73GB1C225K	CHIP C 2.2UF K	
C198			CK73GB1A105K	CHIP C 1.0UF K	
C199,200			CK73GB1C225K	CHIP C 2.2UF K	
C201			CK73GB1H332K	CHIP C 3300PF K	
C202			CK73GB1H104K	CHIP C 0.10UF K	
C203			CC73GCH1H331J	CHIP C 330PF J	
C204			CK73GB1C225K	CHIP C 2.2UF K	
C205			CC73GCH1H331J	CHIP C 330PF J	
C206			CK73GB1H104K	CHIP C 0.10UF K	
C207			CK73GB1H103K	CHIP C 0.010UF K	
C208			CK73GB1H332K	CHIP C 3300PF K	
C209			CK73GB1C225K	CHIP C 2.2UF K	
C210			CK73GB1E105K	CHIP C 1.0UF K	
C211			CK73GB1H222K	CHIP C 2200PF K	
C212			CK73GB1H104K	CHIP C 0.10UF K	
C213			CC73GCH1H471J	CHIP C 470PF J	
C214			CK73GB1E105K	CHIP C 1.0UF K	
C215			CC73GCH1H471J	CHIP C 470PF J	
C216			CK73GB1H104K	CHIP C 0.10UF K	
C217			CK73GB1H103K	CHIP C 0.010UF K	
C218			CK73GB1H222K	CHIP C 2200PF K	
C219			CK73GB1E105K	CHIP C 1.0UF K	
C220			CK73FB0J106K	CHIP C 10UF K	
C221			CK73GB1H104K	CHIP C 0.10UF K	
C222			CK73FB0J106K	CHIP C 10UF K	
C225			CK73GB1E105K	CHIP C 1.0UF K	
C226			CC73GCH1H821J	CHIP C 820PF J	
C227			CK73GB1H104K	CHIP C 0.10UF K	
C228			CC73GCH1H151J	CHIP C 150PF J	
C229			CK73GB1E105K	CHIP C 1.0UF K	
C230			CC73GCH1H151J	CHIP C 150PF J	
C231			CK73GB1H104K	CHIP C 0.10UF K	
C232			CK73GB1H103K	CHIP C 0.010UF K	
C233			CC73GCH1H821J	CHIP C 820PF J	
C234			CK73GB1E105K	CHIP C 1.0UF K	
C235			CK73GB1H103K	CHIP C 0.010UF K	
C236			CK73GB1H104K	CHIP C 0.10UF K	
C237			CK73FB0J106K	CHIP C 10UF K	
C239			CK73GB1H102K	CHIP C 1000PF K	
C240			CK73GB1H104K	CHIP C 0.10UF K	
C241-243			CK73FB0J106K	CHIP C 10UF K	
C244			CK73GB1H104K	CHIP C 0.10UF K	
C247			CK73GB1H104K	CHIP C 0.10UF K	
C248			CK73FB0J106K	CHIP C 10UF K	
C249			CK73GB1H222K	CHIP C 2200PF K	
C250			CK73GB1E105K	CHIP C 1.0UF K	
C251			CC73GCH1H331J	CHIP C 330PF J	
C252,253			CK73GB1H103K	CHIP C 0.010UF K	
C254			CK73GB1E105K	CHIP C 1.0UF K	
C255			CK73GB1H222K	CHIP C 2200PF K	
C256			CK73GB1H103K	CHIP C 0.010UF K	
C257			CK73GB1H104K	CHIP C 0.10UF K	
C258			CC73GCH1H471J	CHIP C 470PF J	
C259			CK73GB1E105K	CHIP C 1.0UF K	
C260			CC73GCH1H471J	CHIP C 470PF J	
C261			CK73GB1H104K	CHIP C 0.10UF K	
C262			CK73GB1H222K	CHIP C 2200PF K	
C263,264			CK73GB1E105K	CHIP C 1.0UF K	
C265			CK73GB1H222K	CHIP C 2200PF K	
C266			CK73GB1H103K	CHIP C 0.010UF K	
C267			CK73GB1H104K	CHIP C 0.10UF K	
C268			CC73GCH1H471J	CHIP C 470PF J	
C269			CK73GB1E105K	CHIP C 1.0UF K	
C270			CC73GCH1H471J	CHIP C 470PF J	
C271			CK73GB1H104K	CHIP C 0.10UF K	
C272			CK73GB1H222K	CHIP C 2200PF K	
C273			CK73GB1E105K	CHIP C 1.0UF K	
C274			CK73GB1H104K	CHIP C 0.10UF K	
C275			CK73FB0J106K	CHIP C 10UF K	
C276			CK73GB1H104K	CHIP C 0.10UF K	
C277			CK73FB0J106K	CHIP C 10UF K	
C278			CK73GB1H104K	CHIP C 0.10UF K	
C279			CK73FB0J106K	CHIP C 10UF K	
C280			CK73GB1H104K	CHIP C 0.10UF K	
C281			CK73FB0J106K	CHIP C 10UF K	
C283			CK73GB1H104K	CHIP C 0.10UF K	
C285			CK73GB1H104K	CHIP C 0.10UF K	
C286,287			CK73EB1A106K	CHIP C 10UF K	
C289			CK73FB0J106K	CHIP C 10UF K	
C290,291			CK73GB1E105K	CHIP C 1.0UF K	
C292			CK73FB0J106K	CHIP C 10UF K	
C293			CK73GB1H103K	CHIP C 0.010UF K	
C295			CE32BM1C101M	CHIP EL 100UF 16WV	
C297		*	CD04BQ1C471M	ELECTRO 470UF 16WV	
C299,300			CK73GB1H102K	CHIP C 1000PF K	
C301		*	CD04BQ1C471M	ELECTRO 470UF 16WV	
C302-304			CC73GCH1H101J	CHIP C 100PF J	
C305			C93-0912-05	CHIP C 100UF M	
C306-308			CK73GB1H104K	CHIP C 0.10UF K	
C310-313			CK73GB1H104K	CHIP C 0.10UF K	
C314,315			CC73GCH1H101J	CHIP C 100PF J	
C316-319			CK73GB1H104K	CHIP C 0.10UF K	
C320			CK73GB1H102K	CHIP C 1000PF K	
C321-324			CK73GB1H104K	CHIP C 0.10UF K	
C325			CC73GCH1H471J	CHIP C 470PF J	
C326			CC73GCH1H050B	CHIP C 5.0PF B	
C327			CK73GB1H104K	CHIP C 0.10UF K	
C328			CC73GCH1H050B	CHIP C 5.0PF B	
C329			CC73GCH1H471J	CHIP C 470PF J	
C330-344			CK73GB1H104K	CHIP C 0.10UF K	
C345,346			CK73GB1H102K	CHIP C 1000PF K	
C347			CK73GB1H104K	CHIP C 0.10UF K	
C348,349			CC73GCH1H030B	CHIP C 3.0PF B	
C350			CK73GB1E105K	CHIP C 1.0UF K	
C351			CK73GB1H102K	CHIP C 1000PF K	
C352-362			CK73GB1H104K	CHIP C 0.10UF K	
C363			CK73GB1E105K	CHIP C 1.0UF K	
C364			CK73GB1H104K	CHIP C 0.10UF K	
C365,366			CK73GB1E105K	CHIP C 1.0UF K	
C367,368			CK73GB1H102K	CHIP C 1000PF K	
C371			CK73GB1H102K	CHIP C 1000PF K	
C373			CK73GB1H102K	CHIP C 1000PF K	
C375			CK73GB1H102K	CHIP C 1000PF K	

PARTS LIST

CONTROL UNIT (X53-446X-XX)

Ref. No.	Address	New parts	Parts No.	Description			Desti-nation
C377			CK73GB1H102K	CHIP C	1000PF	K	
C379,380			CC73GCH1H331J	CHIP C	330PF	J	
C381,382			CC73GCH1H101J	CHIP C	100PF	J	
C385			CK73GB1H102K	CHIP C	1000PF	K	
C386-388			CK73GB1H222K	CHIP C	2200PF	K	
C389-391			CK73GB1H102K	CHIP C	1000PF	K	
C392			CK73GB1H222K	CHIP C	2200PF	K	
C393-395			CK73GB1H102K	CHIP C	1000PF	K	
C396			CK73GB1H222K	CHIP C	2200PF	K	
C397			CK73GB1H102K	CHIP C	1000PF	K	
C399			CK73GB1H102K	CHIP C	1000PF	K	
C400			CK73GB1H222K	CHIP C	2200PF	K	
C402			CK73GB1H102K	CHIP C	1000PF	K	
C403			CK73GB1H222K	CHIP C	2200PF	K	
C404-406			CK73GB1H102K	CHIP C	1000PF	K	
C407			CK73GB1H222K	CHIP C	2200PF	K	
C408			CK73GB1H102K	CHIP C	1000PF	K	
C409			CK73GB1H222K	CHIP C	2200PF	K	
C416,417			CK73GB1H102K	CHIP C	1000PF	K	
C418			CK73GB1H222K	CHIP C	2200PF	K	
C419-422			CK73GB1H102K	CHIP C	1000PF	K	
C423,424			CK73GB1H222K	CHIP C	2200PF	K	
C425			CK73GB1H102K	CHIP C	1000PF	K	
C426			CK73GB1H222K	CHIP C	2200PF	K	
C427			CK73GB1E105K	CHIP C	1.0UF	K	
C428			CK73GB1H102K	CHIP C	1000PF	K	
C429			CK73GB1E105K	CHIP C	1.0UF	K	
C430			CK73GB1H102K	CHIP C	1000PF	K	
C437			CK73GB1H102K	CHIP C	1000PF	K	
C439			CK73GB1H102K	CHIP C	1000PF	K	
C441			CK73GB1H102K	CHIP C	1000PF	K	
C445			CK73GB1H102K	CHIP C	1000PF	K	
C450			CK73GB1H102K	CHIP C	1000PF	K	
C453			CK73GB1H102K	CHIP C	1000PF	K	
C455			CK73GB1H102K	CHIP C	1000PF	K	
C457			CK73GB1H102K	CHIP C	1000PF	K	
C460			CK73GB1H102K	CHIP C	1000PF	K	
C465			CK73GB1E105K	CHIP C	1.0UF	K	
C466			CK73GB1H102K	CHIP C	1000PF	K	
C467			CK73GB1E105K	CHIP C	1.0UF	K	
C468			CK73GB1H102K	CHIP C	1000PF	K	
C469			CK73GB1E105K	CHIP C	1.0UF	K	
C470			CK73GB1H102K	CHIP C	1000PF	K	
C471			CK73GB1H104K	CHIP C	0.10UF	K	
C473			CK73GB1E105K	CHIP C	1.0UF	K	
C474,475			CK73GB1H102K	CHIP C	1000PF	K	
C483			CK73GB1H104K	CHIP C	0.10UF	K	
C486-488			CK73GB1H104K	CHIP C	0.10UF	K	
C489			CK73GB1E105K	CHIP C	1.0UF	K	
C490			C93-0912-05	CHIP C	100UF	M	
C491-493			CK73GB1H104K	CHIP C	0.10UF	K	
C494			CK73GB1H102K	CHIP C	1000PF	K	
C495			CK73EB1A106K	CHIP C	10UF	K	
C496			CK73GB1H102K	CHIP C	1000PF	K	
C501			CK73GB1H102K	CHIP C	1000PF	K	
C505			CC73GCH1H470J	CHIP C	47PF	J	
C506,507			CC73GCH1H101J	CHIP C	100PF	J	
C508-521			CK73GB1H102K	CHIP C	1000PF	K	
C523-529			CK73GB1H102K	CHIP C	1000PF	K	
C530,531			CC73GCH1H101J	CHIP C	100PF	J	

Ref. No.	Address	New parts	Parts No.	Description			Desti-nation
C534,535			CC73GCH1H101J	CHIP C	100PF	J	
C536,537			CK73GB1H103K	CHIP C	0.010UF	K	
C538			CS77BA1A100M	CHIP TNTL	10UF	10WV	
C539			CK73GB1H103K	CHIP C	0.010UF	K	
C540			CC73GCH1H080B	CHIP C	8.0PF	B	
C542			CC73GCH1H151J	CHIP C	150PF	J	
C543			CC73GCH1H390J	CHIP C	39PF	J	
C544,545			CK73GB1H103K	CHIP C	0.010UF	K	
C546			CC73GCH1H050B	CHIP C	5.0PF	B	
C547			CK73GB1H103K	CHIP C	0.010UF	K	
C548			CK73GB1H473K	CHIP C	0.047UF	K	
C549			CC73GCH1H470J	CHIP C	47PF	J	
C550			CK73GB1H103K	CHIP C	0.010UF	K	
C551			CC73GCH1H470J	CHIP C	47PF	J	
C552			CK73GB1H103K	CHIP C	0.010UF	K	
C553			CC73GCH1H390J	CHIP C	39PF	J	
C554			CC73GCH1H040B	CHIP C	4.0PF	B	
C555			CK73GB1H391K	CHIP C	390PF	K	
C556			CC73GCH1H150J	CHIP C	15PF	J	
C557			CC73GCH1H821J	CHIP C	820PF	J	
C558			CC73GCH1H150J	CHIP C	15PF	J	
C559			CK73GB1H391K	CHIP C	390PF	K	
C560			CK73GB1H103K	CHIP C	0.010UF	K	
C561			CC73GCH1H101J	CHIP C	100PF	J	
C562			CK73GB1H472K	CHIP C	4700PF	K	
C563			CK73GB1H473K	CHIP C	0.047UF	K	
C564			CK73GB1H102K	CHIP C	1000PF	K	
C565			CK73GB1H472K	CHIP C	4700PF	K	
C566			CK73GB1H473K	CHIP C	0.047UF	K	
C567			CK73GB1H102K	CHIP C	1000PF	K	
C568			CC73GCH1H680J	CHIP C	68PF	J	
C569			CC73GCH1H120J	CHIP C	12PF	J	
C570			CC73GCH1H271J	CHIP C	270PF	J	
C571			CC73GCH1H080B	CHIP C	8.0PF	B	
C572			CC73GCH1H271J	CHIP C	270PF	J	
C573			CC73GCH1H120J	CHIP C	12PF	J	
C574			CC73GCH1H680J	CHIP C	68PF	J	
C575			CK73GB1H102K	CHIP C	1000PF	K	
C576			CK73GB1H103K	CHIP C	0.010UF	K	
C577			CK73GB1H102K	CHIP C	1000PF	K	
C578			CK73GB1H472K	CHIP C	4700PF	K	
C579			CK73GB1H473K	CHIP C	0.047UF	K	
C580			CK73GB1H102K	CHIP C	1000PF	K	
C581			CC73GCH1H390J	CHIP C	39PF	J	
C582			CC73GCH1H680J	CHIP C	68PF	J	
C583			CC73GCH1H390J	CHIP C	39PF	J	
C584,585			CK73GB1H102K	CHIP C	1000PF	K	
C586			CC73GCH1H560J	CHIP C	56PF	J	
C588			CK73GB1A105K	CHIP C	1.0UF	K	
C589			CK73GB1H103K	CHIP C	0.010UF	K	
C590			CE32CL1H4R7M	CHIP EL	4.7UF	50WV	
C591,592			CK73GB1H102K	CHIP C	1000PF	K	
C593			CE32CL1H4R7M	CHIP EL	4.7UF	50WV	
C594,595			CK73GB1H102K	CHIP C	1000PF	K	
C596			CE32CL1H4R7M	CHIP EL	4.7UF	50WV	
C598			CK73GB1H102K	CHIP C	1000PF	K	
C601			CK73GB1H472K	CHIP C	4700PF	K	
C602			CK73GB1H102K	CHIP C	1000PF	K	
C604			CK73GB1H102K	CHIP C	1000PF	K	
C605			CC73GCH1H390J	CHIP C	39PF	J	

PARTS LIST

CONTROL UNIT (X53-446X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C606			CC73GCH1H680J	CHIP C 68PF J	
C607			CS77BA1A100M	CHIP TNTL 10UF 10WV	
C608			CK73GB1H472K	CHIP C 4700PF K	
C610,611			CK73GB1H103K	CHIP C 0.010UF K	
C612			CS77BA1A100M	CHIP TNTL 10UF 10WV	
C613			CK73GB1C473K	CHIP C 0.047UF K	
C615			CC73GCH1H101J	CHIP C 100PF J	
C616			CK73GB1H103K	CHIP C 0.010UF K	
C617-619			CK73GB1H473K	CHIP C 0.047UF K	
C620			CK73GB1H391K	CHIP C 390PF K	
C621			CC73GCH1H330J	CHIP C 33PF J	
C622			CC73GCH1H561J	CHIP C 560PF J	
C623			CC73GCH1H820J	CHIP C 82PF J	
C624			CC73GCH1H331J	CHIP C 330PF J	
C648			CK73GB1H102K	CHIP C 1000PF K	
C649			CC73GCH1H560J	CHIP C 56PF J	
C650			CC73GCH1H181J	CHIP C 180PF J	
C651			CK73GB1H102K	CHIP C 1000PF K	
C652,653			CK73GB1H103K	CHIP C 0.010UF K	
C654			CK73GB1H102K	CHIP C 1000PF K	
C655,656			CK73GB1H103K	CHIP C 0.010UF K	
C657			CC73GCH1H560J	CHIP C 56PF J	
C658			CC73GCH1H181J	CHIP C 180PF J	
C659			CC73GCH1H270J	CHIP C 27PF J	
C660			CK73GB1H103K	CHIP C 0.010UF K	
C661			CC73GCH1H221J	CHIP C 220PF J	
C662,663			CK73GB1H103K	CHIP C 0.010UF K	
C664			CC73GCH1H270J	CHIP C 27PF J	
C665			CC73GCH1H181J	CHIP C 180PF J	
C666			CK73GB1H103K	CHIP C 0.010UF K	
C667			CC73GCH1H820J	CHIP C 82PF J	
C668			CC73GCH1H560J	CHIP C 56PF J	
C669			CK73GB1H103K	CHIP C 0.010UF K	
C670			CC73GCH1H560J	CHIP C 56PF J	
C671			CK73GB1H103K	CHIP C 0.010UF K	
C672			CC73GCH1H270J	CHIP C 27PF J	
C673			CC73GCH1H330J	CHIP C 33PF J	
C674			CC73GCH1H100C	CHIP C 10PF C	
C675			CC73GCH1H680J	CHIP C 68PF J	
C676			CC73GCH1H560J	CHIP C 56PF J	
C677,678			CK73GB1H103K	CHIP C 0.010UF K	
C679			CC73GCH1H270J	CHIP C 27PF J	
C680			CC73GCH1H080B	CHIP C 8.0PF B	
C681			CK73GB1H103K	CHIP C 0.010UF K	
C682			CC73GCH1H680J	CHIP C 68PF J	
C683			CC73GCH1H560J	CHIP C 56PF J	
C684			CC73GCH1H270J	CHIP C 27PF J	
C685			CC73GCH1H100C	CHIP C 10PF C	
C686			CK73GB1H103K	CHIP C 0.010UF K	
C687			CC73GCH1H270J	CHIP C 27PF J	
C688			CK73GB1H103K	CHIP C 0.010UF K	
C689			CC73GCH1H561J	CHIP C 560PF J	
C690			CK73GB1H103K	CHIP C 0.010UF K	
C691,692			CC73GCH1H820J	CHIP C 82PF J	
C693			CC73GCH1H681J	CHIP C 680PF J	
C694			CC73GCH1H680J	CHIP C 68PF J	
C695			CC73GCH1H820J	CHIP C 82PF J	
C696			CK73GB1H103K	CHIP C 0.010UF K	
C697			CC73GCH1H181J	CHIP C 180PF J	
C698			CC73GCH1H561J	CHIP C 560PF J	
C699			CK73GB1H103K	CHIP C 0.010UF K	
C700			CC73GCH1H180J	CHIP C 18PF J	
C701			CC73GCH1H1R5B	CHIP C 1.5PF B	
C702			CC73GCH1H270J	CHIP C 27PF J	
C703			CC73GCH1H330J	CHIP C 33PF J	
C704			CK73GB1H102K	CHIP C 1000PF K	
C705			CC73GCH1H090B	CHIP C 9.0PF B	
C706			CK73GB1H102K	CHIP C 1000PF K	
C707			CC73GCH1H090B	CHIP C 9.0PF B	
C708			CC73GCH1H270J	CHIP C 27PF J	
C709			CC73GCH1H560J	CHIP C 56PF J	
C710			CC73GCH1H470J	CHIP C 47PF J	
C711			CC73GCH1H560J	CHIP C 56PF J	
C712			CC73GCH1H040B	CHIP C 4.0PF B	
C713			CC73GCH1H150J	CHIP C 15PF J	
C714			CC73GCH1H680J	CHIP C 68PF J	
C715,716			CC73GCH1H470J	CHIP C 47PF J	
C717			CC73GCH1H220J	CHIP C 22PF J	
C718			CC73GCH1H080B	CHIP C 8.0PF B	
C719			CC73GCH1H121J	CHIP C 120PF J	
C720			CC73GCH1H470J	CHIP C 47PF J	
C721			CC73GCH1H040B	CHIP C 4.0PF B	
C722			CC73GCH1H560J	CHIP C 56PF J	
C723			CC73GCH1H150J	CHIP C 15PF J	
C724			CC73GCH1H680J	CHIP C 68PF J	
C725			CC73GCH1H330J	CHIP C 33PF J	
C726			CC73GCH1H030B	CHIP C 3.0PF B	
C727			CC73GCH1H270J	CHIP C 27PF J	
C728			CC73GCH1H151J	CHIP C 150PF J	
C729			CK73GB1H102K	CHIP C 1000PF K	
C730			CC73GCH1H680J	CHIP C 68PF J	
C732			CC73GCH1H060B	CHIP C 6.0PF B	
C733			CC73GCH1H560J	CHIP C 56PF J	
C734			CC73GCH1H330J	CHIP C 33PF J	
C735			CC73GCH1H030B	CHIP C 3.0PF B	
C736			CC73GCH1H270J	CHIP C 27PF J	
C738			CC73GCH1H121J	CHIP C 120PF J	
C739			CC73GCH1H220J	CHIP C 22PF J	
C740			CC73GCH1H680J	CHIP C 68PF J	
C741,742			CK73GB1H102K	CHIP C 1000PF K	
C743			CC73GCH1H121J	CHIP C 120PF J	
C744			CC73GCH1H470J	CHIP C 47PF J	
C745			CC73GCH1H030B	CHIP C 3.0PF B	
C746			CC73GCH1H560J	CHIP C 56PF J	
C748-751			CK73GB1H102K	CHIP C 1000PF K	
C752			CC73GCH1H101J	CHIP C 100PF J	
C753-755			CK73GB1H102K	CHIP C 1000PF K	
C756			CK73GB1H472K	CHIP C 4700PF K	
C757-760			CK73GB1H102K	CHIP C 1000PF K	
C761			CC73GCH1H390J	CHIP C 39PF J	
C762			CK73GB1H102K	CHIP C 1000PF K	
C763			CK73GB1H472K	CHIP C 4700PF K	
C764			CK73GB1H102K	CHIP C 1000PF K	
C765			CC73GCH1H220J	CHIP C 22PF J	
C766			CC73GCH1H240J	CHIP C 24PF J	
C767			CK73GB1H472K	CHIP C 4700PF K	
C768			CC73GCH1H120J	CHIP C 12PF J	
C769			CC73GCH1H180J	CHIP C 18PF J	
C770			CC73GCH1H330J	CHIP C 33PF J	
C771			CC73GCH1H470J	CHIP C 47PF J	

PARTS LIST

CONTROL UNIT (X53-446X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C772			CC73GCH1H220J	CHIP C 22PF J	
C773			CC73GCH1H330J	CHIP C 33PF J	
C774			CC73GCH1H100C	CHIP C 10PF C	
C775			CC73GCH1H120J	CHIP C 12PF J	
C776			CC73GCH1H180J	CHIP C 18PF J	
C777			CC73GCH1H150J	CHIP C 15PF J	
C778			CC73GCH1H220J	CHIP C 22PF J	
C779,780			CK73GB1H102K	CHIP C 1000PF K	
C781-783			CC73GCH1H470J	CHIP C 47PF J	
C784,785			CK73GB1H102K	CHIP C 1000PF K	
C786			CK73GB1H103K	CHIP C 0.010UF K	
C801			CK73FB1H153K	CHIP C 0.015UF K	
C802			CK73GB1H472K	CHIP C 4700PF K	
C803			CK73GB1H102K	CHIP C 1000PF K	
C804			CS77CA1ER47M	CHIP TNTL 0.47UF 25WV	
C805			CK73GB1A105K	CHIP C 1.0UF K	
C806			CK73GB1H102K	CHIP C 1000PF K	
C807			CK73GB1H473K	CHIP C 0.047UF K	
C808			CK73GB1H102K	CHIP C 1000PF K	
C809			CK73FB1H153K	CHIP C 0.015UF K	
C810			CC73GCH1H390J	CHIP C 39PF J	
C811			CK73FB1H153K	CHIP C 0.015UF K	
C812			CK73GB1A105K	CHIP C 1.0UF K	
C813			CS77BA1A100M	CHIP TNTL 10UF 10WV	
C814			CK73GB1C104K	CHIP C 0.10UF K	
C815			CS77BA1A100M	CHIP TNTL 10UF 10WV	
C816			CC73GCH1H680J	CHIP C 68PF J	
C817			CK73GB1C104K	CHIP C 0.10UF K	
C818			CC73GCH1H101J	CHIP C 100PF J	
C819			CK73GB1C104K	CHIP C 0.10UF K	
C820,821			CC73GCH1H101J	CHIP C 100PF J	
C822			CK73GB1C104K	CHIP C 0.10UF K	
C823			CK73GB1H102K	CHIP C 1000PF K	
C824			CC73GCH1H120J	CHIP C 12PF J	
C825			CS77BA1A100M	CHIP TNTL 10UF 10WV	
C826			CK73GB1C104K	CHIP C 0.10UF K	
C827			CC73GCH1H471J	CHIP C 470PF J	
C828			CS77BA1A100M	CHIP TNTL 10UF 10WV	
C829			CK73GB1H472K	CHIP C 4700PF K	
C830			CS77BA1A100M	CHIP TNTL 10UF 10WV	
C831			CC73GCH1H150J	CHIP C 15PF J	
C832			CC73GCH1H120J	CHIP C 12PF J	
C833			CC73GCH1H390J	CHIP C 39PF J	
C835			CC73GCH1HR75B	CHIP C 0.75PF B	
C836			CC73GCH1H090B	CHIP C 9.0PF B	
C837			CK73GB1H103K	CHIP C 0.010UF K	
C838			CC73GCH1H150J	CHIP C 15PF J	
C839			CK73GB1H102K	CHIP C 1000PF K	
C840			CK73GB1H473K	CHIP C 0.047UF K	
C841,842			CC73GCH1H120J	CHIP C 12PF J	
C843			CC73GCH1H030B	CHIP C 3.0PF B	
C844			CK73GB1H103K	CHIP C 0.010UF K	
C845			CC73GCH1H471J	CHIP C 470PF J	
C846			CC73GCH1H120J	CHIP C 12PF J	
C847,848			CK73GB1H102K	CHIP C 1000PF K	
C849,850			CK73EB1E106K	CHIP C 10UF K	
C851			CK73GB1H102K	CHIP C 1000PF K	
C852			CC73GCH1H101J	CHIP C 100PF J	
C853,854			CC73GCH1H150J	CHIP C 15PF J	
C855			CC73GCH1H101J	CHIP C 100PF J	

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C856			CK73EB1E106K	CHIP C 10UF K	
C857			CC73GCH1H220J	CHIP C 22PF J	
C858			CC73GCH1H030B	CHIP C 3.0PF B	
C859			CC73GCH1H560J	CHIP C 56PF J	
C860			CC73GCH1H101J	CHIP C 100PF J	
C861			CS77BA1A100M	CHIP TNTL 10UF 10WV	
C862			CK73GB1C104K	CHIP C 0.10UF K	
C863			CC73GCH1H150J	CHIP C 15PF J	
C864			CC73GCH1H030B	CHIP C 3.0PF B	
C865-872			CK73GB1C104K	CHIP C 0.10UF K	
C873			CK73GB1A105K	CHIP C 1.0UF K	
C874,875			CC73GCH1H180J	CHIP C 18PF J	
C876			CC73GCH1H330J	CHIP C 33PF J	
C877			CK73GB1H102K	CHIP C 1000PF K	
C878			CC73GCH1H120J	CHIP C 12PF J	
C879			CK73GB1C104K	CHIP C 0.10UF K	
C880			CC73GCH1H470J	CHIP C 47PF J	
C881,882			CK73GB1C104K	CHIP C 0.10UF K	
C883			CC73GCH1H390J	CHIP C 39PF J	
C884			CC73GCH1H470J	CHIP C 47PF J	
C885,886			CK73GB1H102K	CHIP C 1000PF K	
C887			CK73GB1C104K	CHIP C 0.10UF K	
C888			CK73GB1H102K	CHIP C 1000PF K	
C889,890			CC73GCH1H060B	CHIP C 6.0PF B	
C891			CC73GCH1H080B	CHIP C 8.0PF B	
C892			CK73GB1H102K	CHIP C 1000PF K	
C895			CC73GCH1H330J	CHIP C 33PF J	
C901-903			CC73GCH1H101J	CHIP C 100PF J	
C904,905			CK73GB1H102K	CHIP C 1000PF K	
C908-915			CK73GB1H102K	CHIP C 1000PF K	
C916			CK73GB1H472K	CHIP C 4700PF K	
C917,918			CK73GB1A105K	CHIP C 1.0UF K	
C919,920			CK73GB1H102K	CHIP C 1000PF K	
C921-925			CK73GB1A105K	CHIP C 1.0UF K	
C926			CK73GB1H102K	CHIP C 1000PF K	
C927			CK73GB1H104K	CHIP C 0.10UF K	
C928			CK73GB1A105K	CHIP C 1.0UF K	
C929			CK73GB1H102K	CHIP C 1000PF K	
C930,931			CK73GB1A105K	CHIP C 1.0UF K	
C932			CC73GCH1H222J	CHIP C 2200PF J	
C933			CK73GB1H102K	CHIP C 1000PF K	
C934			CK73FB0J106K	CHIP C 10UF K	
C935			CK73GB1H102K	CHIP C 1000PF K	
C936,937			CK73FB0J106K	CHIP C 10UF K	
C938,939			CK73GB1H102K	CHIP C 1000PF K	
C940,941			CK73FB0J106K	CHIP C 10UF K	
C942,943			CC73GCH1H150J	CHIP C 15PF J	
C944			CK73GB1H102K	CHIP C 1000PF K	
C945			CK73FB0J106K	CHIP C 10UF K	
C946			CK73GB1H102K	CHIP C 1000PF K	
C947			CK73FB0J106K	CHIP C 10UF K	
C948-951			CK73GB1H104K	CHIP C 0.10UF K	
C952			CK73GB1A105K	CHIP C 1.0UF K	
C953			CC73GCH1H050B	CHIP C 5.0PF B	
C954			CK73GB1A105K	CHIP C 1.0UF K	
C955			CC73GCH1H050B	CHIP C 5.0PF B	
C956,957			CK73GB1H104K	CHIP C 0.10UF K	
C958			CK73GB1H102K	CHIP C 1000PF K	
C959			CK73GB1A105K	CHIP C 1.0UF K	
C960-962			CK73GB1H104K	CHIP C 0.10UF K	

PARTS LIST

CONTROL UNIT (X53-446X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti- nation
C964			CK73GB1A105K	CHIP C 1.0UF K	
C965			CK73GB1H104K	CHIP C 0.10UF K	
C966			CK73GB1E105K	CHIP C 1.0UF K	
C968-970			CK73GB1E105K	CHIP C 1.0UF K	
C971			CC73GCH1H330J	CHIP C 33PF J	
TC501			C05-0384-05	CERAMIC TRIMMER CAPACITOR (10P)	
TC801			C05-0384-05	CERAMIC TRIMMER CAPACITOR (10P)	
-			E18-0254-05	SOCKET	
CN1,2			E40-6526-05	PIN ASSY	
CN61,62			E40-6525-05	PIN ASSY	
CN63		✻	E40-6879-05	FLAT CABLE CONNECTOR	
CN64			E41-1687-05	PIN ASSY	
CN65			E40-6525-05	PIN ASSY	
CN301		✻	E41-1948-05	FLAT CABLE CONNECTOR	
CN302			E40-6656-05	PIN ASSY	
CN303			E40-6745-05	FLAT CABLE CONNECTOR	
CN305			E40-6727-05	FLAT CABLE CONNECTOR	
CN502			E40-6745-05	FLAT CABLE CONNECTOR	
CN503			E41-1684-05	PIN ASSY	
CN508			E04-0191-05	PIN SOCKET	
CN601			E04-0191-05	PIN SOCKET	
CN654			E04-0191-05	PIN SOCKET	
CN901			E40-6357-05	PIN ASSY	
CN903,904			E40-5487-05	PIN ASSY	
J901			E58-0529-05	SUB SOCKET (D)	
J902		✻	E58-0537-05	RECTANGULAR RECEPTACLE	
W504		✻	E37-1498-05	LEAD WIRE WITH CONNECTOR	
202	2D	✻	F20-3401-04	INSULATING SHEET	
F901		✻	F53-0317-15	FUSE (500MA)	
L2,3		✻	L33-1548-05	CHOKE COIL	
L4		✻	L33-1553-05	CHOKE COIL	
L5,6		✻	L33-1548-05	CHOKE COIL	
L7		✻	L33-1553-05	CHOKE COIL	
L8			L92-0639-05	CHIP FERRITE	
L11			L33-2600-05	CHOKE COIL	
L13			L33-2600-05	CHOKE COIL	
L15-18			L92-0641-05	FERRITE CORE	
L19			L41-1005-39	SMALL FIXED INDUCTOR (10UH)	
L20,21		✻	L33-1554-05	CHOKE COIL	
L61-63			L92-0467-05	CHIP FERRITE	
L64		✻	L33-1553-05	CHOKE COIL	
L65,66			L92-0639-05	CHIP FERRITE	
L68			L92-0467-05	CHIP FERRITE	
L69			L92-0639-05	CHIP FERRITE	
L301,302		✻	L33-1554-05	CHOKE COIL	
L303		✻	L79-1940-05	FILTER	
L305			L92-0639-05	CHIP FERRITE	
L307			L92-0639-05	CHIP FERRITE	
L402-405			L92-0639-05	CHIP FERRITE	
L407			L92-0639-05	CHIP FERRITE	
L408		✻	L33-1554-05	CHOKE COIL	
L409-420			L92-0180-05	CHIP FERRITE	
L501			L92-0639-05	CHIP FERRITE	
L502			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L503			L41-1595-33	SMALL FIXED INDUCTOR (1.5UH)	
L504			L41-2295-33	SMALL FIXED INDUCTOR (2.2UH)	
L505			L34-4816-05	COIL	
L506			L41-6875-33	SMALL FIXED INDUCTOR (0.068UH)	
L507			L41-1895-33	SMALL FIXED INDUCTOR (1.8UH)	
L508			L41-3375-33	SMALL FIXED INDUCTOR (0.033UH)	
L509			L41-1595-33	SMALL FIXED INDUCTOR (1.5UH)	
L510			L41-6875-33	SMALL FIXED INDUCTOR (0.068UH)	
L511			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L512			L41-1095-33	SMALL FIXED INDUCTOR (1.0UH)	
L513			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	
L514			L41-4785-33	SMALL FIXED INDUCTOR (0.47UH)	
L515			L41-2275-33	SMALL FIXED INDUCTOR (0.022UH)	
L516			L41-8285-33	SMALL FIXED INDUCTOR (0.82UH)	
L517			L41-2275-33	SMALL FIXED INDUCTOR (0.022UH)	
L518			L41-4785-33	SMALL FIXED INDUCTOR (0.47UH)	
L519			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	
L520			L41-1095-33	SMALL FIXED INDUCTOR (1.0UH)	
L521,522			L41-1585-33	SMALL FIXED INDUCTOR (0.15UH)	
L523			L41-2295-33	SMALL FIXED INDUCTOR (2.2UH)	
L524,525			L40-2285-92	SMALL FIXED INDUCTOR (220NH)	
L601			L41-1095-33	SMALL FIXED INDUCTOR (1.0UH)	
L602			L41-1585-33	SMALL FIXED INDUCTOR (0.15UH)	
L603,604			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L605			L41-8285-33	SMALL FIXED INDUCTOR (0.82UH)	
L606			L41-5685-33	SMALL FIXED INDUCTOR (0.56UH)	
L651		✻	L39-1480-15	TOROIDAL COIL	
L652			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	
L653			L41-8275-33	SMALL FIXED INDUCTOR (0.082UH)	
L654			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	
L655			L40-1288-67	SMALL FIXED INDUCTOR (120NH)	
L656,657			L41-1085-14	SMALL FIXED INDUCTOR (100NH)	
L658			L40-3391-86	SMALL FIXED INDUCTOR (3.3UH)	
L659			L40-1288-67	SMALL FIXED INDUCTOR (120NH)	
L660,661			L41-1085-14	SMALL FIXED INDUCTOR (100NH)	
L662			L41-3385-33	SMALL FIXED INDUCTOR (0.33UH)	
L663			L41-4785-33	SMALL FIXED INDUCTOR (0.47UH)	
L664			L41-2785-33	SMALL FIXED INDUCTOR (0.27UH)	
L665			L41-6878-14	SMALL FIXED INDUCTOR (68NH)	
L666			L41-1085-14	SMALL FIXED INDUCTOR (100NH)	
L667			L41-6878-14	SMALL FIXED INDUCTOR (68NH)	
L668		✻	L34-4936-05	COIL	
L669			L41-5678-14	SMALL FIXED INDUCTOR (56NH)	
L670			L41-2285-14	SMALL FIXED INDUCTOR (220NH)	
L671		✻	L34-4936-05	COIL	
L672			L40-1288-67	SMALL FIXED INDUCTOR (120NH)	
L673		✻	L34-4936-05	COIL	
L674			L41-5678-14	SMALL FIXED INDUCTOR (56NH)	
L675			L41-2785-14	SMALL FIXED INDUCTOR (270NH)	
L676,677		✻	L34-4936-05	COIL	
L678			L41-1085-14	SMALL FIXED INDUCTOR (100NH)	
L679			L41-5678-14	SMALL FIXED INDUCTOR (56NH)	
L680			L41-2785-14	SMALL FIXED INDUCTOR (270NH)	
L681		✻	L34-4936-05	COIL	
L682			L41-1085-14	SMALL FIXED INDUCTOR (100NH)	
L683			L41-2285-14	SMALL FIXED INDUCTOR (220NH)	
L684			L41-8275-14	SMALL FIXED INDUCTOR (82NH)	
L685			L41-6878-14	SMALL FIXED INDUCTOR (68NH)	
L686			L41-1895-33	SMALL FIXED INDUCTOR (1.8UH)	
L687			L40-3391-86	SMALL FIXED INDUCTOR (3.3UH)	
L688			L41-1095-33	SMALL FIXED INDUCTOR (1.0UH)	
L689			L41-3385-33	SMALL FIXED INDUCTOR (0.33UH)	
L690			L41-3975-33	SMALL FIXED INDUCTOR (0.039UH)	
L691			L41-3375-33	SMALL FIXED INDUCTOR (0.033UH)	
L692			L41-6878-14	SMALL FIXED INDUCTOR (68NH)	

PARTS LIST

CONTROL UNIT (X53-446X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
L693			L41-4785-33	SMALL FIXED INDUCTOR (0.47UH)	
L696			L41-1895-33	SMALL FIXED INDUCTOR (1.8UH)	
L697			L41-1085-14	SMALL FIXED INDUCTOR (100NH)	
L698			L40-1288-67	SMALL FIXED INDUCTOR (120NH)	
L801			L41-1095-33	SMALL FIXED INDUCTOR (1.0UH)	
L802,803			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L804			L41-1585-33	SMALL FIXED INDUCTOR (0.15UH)	
L805			L41-2285-33	SMALL FIXED INDUCTOR (0.22UH)	
L806			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L807			L41-2295-09	SMALL FIXED INDUCTOR (2200NH)	
L808			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L809			L41-2798-08	SMALL FIXED INDUCTOR (2.7UH)	
L810			L34-4612-05	AIR-CORE COIL	
L811,812			L41-5698-08	SMALL FIXED INDUCTOR (5.6UH)	
L813			L40-3375-92	SMALL FIXED INDUCTOR (33NH)	
L814			L41-3375-33	SMALL FIXED INDUCTOR (0.033UH)	
L815			L41-1275-33	SMALL FIXED INDUCTOR (0.012UH)	
L816			L41-5675-33	SMALL FIXED INDUCTOR (0.056UH)	
L817			L92-0639-05	CHIP FERRITE	
L818			L41-3369-16	SMALL FIXED INDUCTOR (3.3NH)	
L819			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L820		✻	L41-6869-43	SMALL FIXED INDUCTOR (6.8NH)	
L821			L41-5675-33	SMALL FIXED INDUCTOR (0.056UH)	
L822			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L823			L41-1275-33	SMALL FIXED INDUCTOR (0.012UH)	
L824		✻	L39-1480-15	TOROIDAL COIL	
L825			L40-1588-67	SMALL FIXED INDUCTOR (150NH)	
L826			L40-1088-67	SMALL FIXED INDUCTOR (100NH)	
L827			L41-3391-08	SMALL FIXED INDUCTOR (3.3NH)	
L828			L40-8278-67	SMALL FIXED INDUCTOR (82NH)	
L829			L41-1895-33	SMALL FIXED INDUCTOR (1.8UH)	
L830-833			L41-1575-06	SMALL FIXED INDUCTOR (15NH)	
L840			L41-1895-33	SMALL FIXED INDUCTOR (1.8UH)	
L903-905			L92-0639-05	CHIP FERRITE	
L906			L41-2295-33	SMALL FIXED INDUCTOR (2.2UH)	
L907-913			L92-0639-05	CHIP FERRITE	
L916			L33-2375-05	CHOKE COIL	
L917		✻	L33-1554-05	CHOKE COIL	
L919,920			L41-2295-33	SMALL FIXED INDUCTOR (2.2UH)	
X301		✻	L77-3054-05	CRYSTAL RESONATOR (24.576MHZ)	
X302		✻	L77-3069-05	CRYSTAL RESONATOR (11.0592MHZ)	
X502			L77-1906-05	CRYSTAL RESONATOR (15.6MHZ)	
X901		✻	L77-3053-05	CRYSTAL RESONATOR (12MHZ)	
X902		✻	L77-3052-05	CRYSTAL RESONATOR (24MHZ)	
CP301,302			RK74GB1J473J	CHIP-COM 47K J 1/16W	
CP304,305			RK74GB1J473J	CHIP-COM 47K J 1/16W	
CP310			RK74GB1J473J	CHIP-COM 47K J 1/16W	
CP314-316			RK74GB1J473J	CHIP-COM 47K J 1/16W	
CP317-320			RK74GB1J470J	CHIP-COM 47 J 1/16W	
CP321			RK75GB1JR00	CHIP-COM 0.00 1/16W	
R1			RK73GB2A473J	CHIP R 47K J 1/10W	
R2			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R3			RK73EB2E000J	CHIP R 0.0 J 1/4W	
R4			RK73GB2A103J	CHIP R 10K J 1/10W	
R5			RK73GB2A184J	CHIP R 180K J 1/10W	
R6			RK73GB2A103J	CHIP R 10K J 1/10W	
R7			RK73GB2A101J	CHIP R 100 J 1/10W	
R8			RK73GH2A393D	CHIP R 39K D 1/10W	
R9			RK73GH2A123D	CHIP R 12K D 1/10W	

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R11,12			RK73EB2E000J	CHIP R 0.0 J 1/4W	
R13			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R14			RK73GB2A473J	CHIP R 47K J 1/10W	
R15			RK73GB2A103J	CHIP R 10K J 1/10W	
R16			RK73GB2A184J	CHIP R 180K J 1/10W	
R17			RK73GB2A103J	CHIP R 10K J 1/10W	
R18			RK73GB2A101J	CHIP R 100 J 1/10W	
R19			RK73GH2A124D	CHIP R 120K D 1/10W	
R20			RK73GH2A133D	CHIP R 13K D 1/10W	
R22			RK73EB2E000J	CHIP R 0.0 J 1/4W	
R25			RK73FB2B000J	CHIP R 0.0 J 1/8W	
R26			RK73EB2E000J	CHIP R 0.0 J 1/4W	
R27			RK73GB2A473J	CHIP R 47K J 1/10W	
R28			RK73GB2A103J	CHIP R 10K J 1/10W	
R29			RK73EB2E000J	CHIP R 0.0 J 1/4W	
R30			RK73GB2A103J	CHIP R 10K J 1/10W	
R31			RK73EB2E000J	CHIP R 0.0 J 1/4W	
R33-36			RK73PB2H1R0J	CHIP R 1.0 J 1/2W	
R37			RK73PB2H101J	CHIP R 100 J 1/2W	
R43,44		✻	RK73PB2H6R8J	CHIP R 6.8 J 1/2W	
R45			RK73PB2H101J	CHIP R 100 J 1/2W	
R46			RK73GH2A333D	CHIP R 33K D 1/10W	
R47			RK73GH2A622D	CHIP R 6.2K D 1/10W	
R48			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R49			RK73PB2H2R2J	CHIP R 2.2 J 1/2W	
R61,62			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R63,64			RK73GB2A470J	CHIP R 47 J 1/10W	
R65-71			RK73GB2A101J	CHIP R 100 J 1/10W	
R72-74			RK73GB2A470J	CHIP R 47 J 1/10W	
R75			RK73GB2A223J	CHIP R 22K J 1/10W	
R77			RK73GB2A223J	CHIP R 22K J 1/10W	
R79,80			RK73GB2A334J	CHIP R 330K J 1/10W	
R81			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R82,83			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R85			RK73GB2A184J	CHIP R 180K J 1/10W	
R86,87			RK73GB2A223J	CHIP R 22K J 1/10W	
R88,89			RK73GB2A183J	CHIP R 18K J 1/10W	
R91,92			RK73GB2A103J	CHIP R 10K J 1/10W	
R94,95			RK73GB2A183J	CHIP R 18K J 1/10W	
R96,97			RK73GB2A223J	CHIP R 22K J 1/10W	
R98-101			RK73GB2A183J	CHIP R 18K J 1/10W	
R104,105			RK73GB2A100J	CHIP R 10 J 1/10W	
R106			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R108,109			RK73GB2A223J	CHIP R 22K J 1/10W	
R110			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R111			RK73GB2A333J	CHIP R 33K J 1/10W	
R112,113			RK73GB2A103J	CHIP R 10K J 1/10W	
R115,116			RK73GB2A333J	CHIP R 33K J 1/10W	
R117,118			RK73GB2A223J	CHIP R 22K J 1/10W	
R119			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R120,121			RK73GB2A333J	CHIP R 33K J 1/10W	
R122			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R125,126			RK73GB2A220J	CHIP R 22 J 1/10W	
R127			RK73GB2A151J	CHIP R 150 J 1/10W	
R128			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R129			RK73GB2A4R7J	CHIP R 4.7 J 1/10W	
R130			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R131			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R132			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R133			RK73GB2A104J	CHIP R 100K J 1/10W	

PARTS LIST

CONTROL UNIT (X53-446X-XX)

Ref. No.	Address	New parts	Parts No.	Description				Desti-nation
R134			RK73GB2A103J	CHIP R	10K	J	1/10W	
R135			RK73GB2A102J	CHIP R	1.0K	J	1/10W	
R136			RK73GB2A103J	CHIP R	10K	J	1/10W	
R137			RK73GB2A000J	CHIP R	0.0	J	1/10W	
R140			RK73GB2A472J	CHIP R	4.7K	J	1/10W	
R141			RK73GB2A123J	CHIP R	12K	J	1/10W	
R142			RK73GB2A183J	CHIP R	18K	J	1/10W	
R143			RK73GB2A123J	CHIP R	12K	J	1/10W	
R144			RK73GB2A223J	CHIP R	22K	J	1/10W	
R145			RK73GB2A822J	CHIP R	8.2K	J	1/10W	
R146-149			RK73GB2A223J	CHIP R	22K	J	1/10W	
R152			RK73GB2A123J	CHIP R	12K	J	1/10W	
R153			RK73GB2A183J	CHIP R	18K	J	1/10W	
R154			RK73GB2A153J	CHIP R	15K	J	1/10W	
R155			RK73GB2A223J	CHIP R	22K	J	1/10W	
R158			RK73GB2A472J	CHIP R	4.7K	J	1/10W	
R159			RK73GB2A822J	CHIP R	8.2K	J	1/10W	
R160			RK73GB2A123J	CHIP R	12K	J	1/10W	
R161,162			RK73GB2A682J	CHIP R	6.8K	J	1/10W	
R163			RK73GB2A183J	CHIP R	18K	J	1/10W	
R164			RK73GB2A682J	CHIP R	6.8K	J	1/10W	
R165			RK73GB2A123J	CHIP R	12K	J	1/10W	
R166,167			RK73GB2A103J	CHIP R	10K	J	1/10W	
R169,170			RK73GB2A393J	CHIP R	39K	J	1/10W	
R171,172			RK73GB2A103J	CHIP R	10K	J	1/10W	
R174-176			RK73GB2A103J	CHIP R	10K	J	1/10W	
R177			RK73GB2A101J	CHIP R	100	J	1/10W	
R178			RK73GB2A471J	CHIP R	470	J	1/10W	
R179			RK73GB2A104J	CHIP R	100K	J	1/10W	
R181			RK73GB2A104J	CHIP R	100K	J	1/10W	
R182			RK73GB2A822J	CHIP R	8.2K	J	1/10W	
R183,184			RK73GB2A183J	CHIP R	18K	J	1/10W	
R185,186			RK73GB2A223J	CHIP R	22K	J	1/10W	
R188,189			RK73GB2A183J	CHIP R	18K	J	1/10W	
R190			RK73GB2A822J	CHIP R	8.2K	J	1/10W	
R192-194			RK73GB2A183J	CHIP R	18K	J	1/10W	
R195,196			RK73GB2A223J	CHIP R	22K	J	1/10W	
R198			RK73GB2A822J	CHIP R	8.2K	J	1/10W	
R199,200			RK73GB2A683J	CHIP R	68K	J	1/10W	
R205-207			RK73GB2A183J	CHIP R	18K	J	1/10W	
R208,209			RK73GB2A223J	CHIP R	22K	J	1/10W	
R211-213			RK73GB2A183J	CHIP R	18K	J	1/10W	
R214			RK73GB2A000J	CHIP R	0.0	J	1/10W	
R216			RK73GB2A103J	CHIP R	10K	J	1/10W	
R217,218			RK73GB2A223J	CHIP R	22K	J	1/10W	
R222			RK73GB2A104J	CHIP R	100K	J	1/10W	
R223			RK73GB2A103J	CHIP R	10K	J	1/10W	
R224			RK73GB2A102J	CHIP R	1.0K	J	1/10W	
R226,227			RK73GB2A223J	CHIP R	22K	J	1/10W	
R229-234			RK73GB2A183J	CHIP R	18K	J	1/10W	
R236			RK73GB2A223J	CHIP R	22K	J	1/10W	
R237			RK73GB2A183J	CHIP R	18K	J	1/10W	
R238			RK73GB2A223J	CHIP R	22K	J	1/10W	
R239,240			RK73GB2A183J	CHIP R	18K	J	1/10W	
R242			RK73GB2A473J	CHIP R	47K	J	1/10W	
R243			RK73GB2A103J	CHIP R	10K	J	1/10W	
R244			RK73GB2A473J	CHIP R	47K	J	1/10W	
R246			RK73GB2A223J	CHIP R	22K	J	1/10W	
R247			RK73GB2A183J	CHIP R	18K	J	1/10W	
R248			RK73GB2A223J	CHIP R	22K	J	1/10W	
R249,250			RK73GB2A183J	CHIP R	18K	J	1/10W	
R252,253			RK73GB2A472J	CHIP R	4.7K	J	1/10W	
R254			RK73GB2A332J	CHIP R	3.3K	J	1/10W	
R255,256			RK73GB2A472J	CHIP R	4.7K	J	1/10W	
R257			RK73GB2A103J	CHIP R	10K	J	1/10W	
R258			RK73GB2A472J	CHIP R	4.7K	J	1/10W	
R259,260			RK73GB2A102J	CHIP R	1.0K	J	1/10W	
R261-266			RK73GB2A103J	CHIP R	10K	J	1/10W	
R267,268			RK73GB2A102J	CHIP R	1.0K	J	1/10W	
R269			RK73GB2A000J	CHIP R	0.0	J	1/10W	
R270-273			RK73GB2A473J	CHIP R	47K	J	1/10W	
R300			RK73GB2A473J	CHIP R	47K	J	1/10W	
R303			RK73GB2A101J	CHIP R	100	J	1/10W	
R306			RK73GB2A473J	CHIP R	47K	J	1/10W	
R309			RK73GB2A470J	CHIP R	47	J	1/10W	
R312-314			RK73GB2A470J	CHIP R	47	J	1/10W	
R315			RK73GB2A473J	CHIP R	47K	J	1/10W	
R316			RK73GB2A000J	CHIP R	0.0	J	1/10W	
R317			RK73GB2A470J	CHIP R	47	J	1/10W	
R320			RK73GB2A470J	CHIP R	47	J	1/10W	
R321			RK73GB2A473J	CHIP R	47K	J	1/10W	
R322			RK73GB2A470J	CHIP R	47	J	1/10W	
R323			RK73GB2A473J	CHIP R	47K	J	1/10W	
R324			RK73GB2A470J	CHIP R	47	J	1/10W	
R325			RK73GB2A473J	CHIP R	47K	J	1/10W	
R326			RK73GB2A470J	CHIP R	47	J	1/10W	
R327			RK73GB2A473J	CHIP R	47K	J	1/10W	
R328			RK73GB2A470J	CHIP R	47	J	1/10W	
R329			RK73GB2A473J	CHIP R	47K	J	1/10W	
R330			RK73GB2A470J	CHIP R	47	J	1/10W	
R331			RK73GB2A473J	CHIP R	47K	J	1/10W	
R332,333			RK73GB2A000J	CHIP R	0.0	J	1/10W	
R334-336			RK73GB2A470J	CHIP R	47	J	1/10W	
R339			RK73GB2A000J	CHIP R	0.0	J	1/10W	
R341			RK73GB2A473J	CHIP R	47K	J	1/10W	
R343			RK73GB2A000J	CHIP R	0.0	J	1/10W	
R344			RK73GB2A470J	CHIP R	47	J	1/10W	
R345-348			RK73GB2A473J	CHIP R	47K	J	1/10W	
R355			RK73GB2A473J	CHIP R	47K	J	1/10W	
R357			RK73GB2A473J	CHIP R	47K	J	1/10W	
R365			RK73GB2A105J	CHIP R	1.0M	J	1/10W	
R366			RK73GB2A000J	CHIP R	0.0	J	1/10W	
R367			RK73GB2A473J	CHIP R	47K	J	1/10W	
R370			RK73GB2A330J	CHIP R	33	J	1/10W	
R372			RK73GB2A472J	CHIP R	4.7K	J	1/10W	
R375			RK73GB2A472J	CHIP R	4.7K	J	1/10W	
R378			RK73GB2A102J	CHIP R	1.0K	J	1/10W	
R380,381			RK73GB2A105J	CHIP R	1.0M	J	1/10W	
R382			RK73GB2A473J	CHIP R	47K	J	1/10W	
R383			RK73GB2A101J	CHIP R	100	J	1/10W	
R384-386			RK73GB2A000J	CHIP R	0.0	J	1/10W	
R387			RK73GB2A101J	CHIP R	100	J	1/10W	
R388			RK73GB2A000J	CHIP R	0.0	J	1/10W	
R389			RK73GB2A154J	CHIP R	150K	J	1/10W	
R390			RK73GB2A000J	CHIP R	0.0	J	1/10W	
R391			RK73GB2A473J	CHIP R	47K	J	1/10W	
R393			RK73GB2A105J	CHIP R	1.0M	J	1/10W	
R394,395			RK73GB2A473J	CHIP R	47K	J	1/10W	
R397-399			RK73GB2A102J	CHIP R	1.0K	J	1/10W	E
R397,398			RK73GB2A102J	CHIP R	1.0K	J	1/10W	K

PARTS LIST

CONTROL UNIT (X53-446X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti- nation
R403			RK73GB2A473J	CHIP R 47K J 1/10W	
R405			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R406			RK73GB2A473J	CHIP R 47K J 1/10W	
R407			RK73GB2A101J	CHIP R 100 J 1/10W	
R408-411			RK73GB2A473J	CHIP R 47K J 1/10W	
R412,413			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R414			RK73GB2A473J	CHIP R 47K J 1/10W	
R415,416			RK73GB2A103J	CHIP R 10K J 1/10W	
R417,418			RK73GB2A101J	CHIP R 100 J 1/10W	
R419-423			RK73GB2A473J	CHIP R 47K J 1/10W	
R424			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R425			RK73GB2A103J	CHIP R 10K J 1/10W	
R426			RK73GB2A183J	CHIP R 18K J 1/10W	
R439-494			RK73GB2A101J	CHIP R 100 J 1/10W	
R495			RK73GB2A473J	CHIP R 47K J 1/10W	
R497			RK73GB2A473J	CHIP R 47K J 1/10W	
R498			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R499			RK73GB2A473J	CHIP R 47K J 1/10W	
R501-527			RK73GB2A101J	CHIP R 100 J 1/10W	
R528			RK73GB2A103J	CHIP R 10K J 1/10W	
R530			RK73GB2A223J	CHIP R 22K J 1/10W	
R531			RK73GB2A101J	CHIP R 100 J 1/10W	
R532			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R537			RK73GB2A100J	CHIP R 10 J 1/10W	
R538			RK73GB2A101J	CHIP R 100 J 1/10W	
R539			RK73GB2A822J	CHIP R 8.2K J 1/10W	
R540			RK73GB2A153J	CHIP R 15K J 1/10W	
R541			RK73GB2A391J	CHIP R 390 J 1/10W	
R542			RK73GB2A181J	CHIP R 180 J 1/10W	
R543			RK73GB2A224J	CHIP R 220K J 1/10W	
R544			RK73GB2A470J	CHIP R 47 J 1/10W	
R545-547			RK73GB2A180J	CHIP R 18 J 1/10W	
R548			RK73GB2A153J	CHIP R 15K J 1/10W	
R549			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R550			RK73GB2A470J	CHIP R 47 J 1/10W	
R551			RK73GB2A271J	CHIP R 270 J 1/10W	
R552			RK73GB2A470J	CHIP R 47 J 1/10W	
R553			RK73GB2A153J	CHIP R 15K J 1/10W	
R554			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R555			RK73GB2A271J	CHIP R 270 J 1/10W	
R556,557			RK73GB2A180J	CHIP R 18 J 1/10W	
R558			RK73GB2A470J	CHIP R 47 J 1/10W	
R559,560			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R561			RK73GB2A101J	CHIP R 100 J 1/10W	
R562			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R563			RK73GB2A820J	CHIP R 82 J 1/10W	
R564			RK73GB2A121J	CHIP R 120 J 1/10W	
R565			RK73GB2A820J	CHIP R 82 J 1/10W	
R567			RK73GB2A101J	CHIP R 100 J 1/10W	
R568			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R569			RK73GB2A272J	CHIP R 2.7K J 1/10W	
R601			RK73GB2A561J	CHIP R 560 J 1/10W	
R602			RK73GB2A683J	CHIP R 68K J 1/10W	
R604			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R605			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R606			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R607,608			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R609			RK73GB2A560J	CHIP R 56 J 1/10W	
R610			RK73GB2A331J	CHIP R 330 J 1/10W	
R611			RK73GB2A101J	CHIP R 100 J 1/10W	
R612			RK73GB2A104J	CHIP R 100K J 1/10W	
R614			RK73GB2A391J	CHIP R 390 J 1/10W	
R615			RK73GB2A470J	CHIP R 47 J 1/10W	
R616,617			RK73GB2A153J	CHIP R 15K J 1/10W	
R618			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R619			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R621			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R624			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R625			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R626			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R627			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R630			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R632			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R633,634			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R636-640			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R648			RK73GB2A821J	CHIP R 820 J 1/10W	
R649,650			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R651-654			RK73GB2A101J	CHIP R 100 J 1/10W	
R655			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R657			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R658,659			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R660			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R661,662			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R663			RK73GB2A821J	CHIP R 820 J 1/10W	
R667			RK73GB2A104J	CHIP R 100K J 1/10W	
R668			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R669			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R671			RK73GB2A821J	CHIP R 820 J 1/10W	
R672-676			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R679			RK73GB2A471J	CHIP R 470 J 1/10W	
R680			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R681			RK73GB2A120J	CHIP R 12 J 1/10W	
R682			RK73GB2A821J	CHIP R 820 J 1/10W	
R684			RK73GB2A471J	CHIP R 470 J 1/10W	
R685			RK73GB2A271J	CHIP R 270 J 1/10W	
R686			RK73GB2A121J	CHIP R 120 J 1/10W	
R687			RK73GB2A151J	CHIP R 150 J 1/10W	
R688			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R689			RK73GB2A121J	CHIP R 120 J 1/10W	
R690			RK73GB2A180J	CHIP R 18 J 1/10W	
R691			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R692			RK73GB2A470J	CHIP R 47 J 1/10W	
R693			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R694			RK73GB2A390J	CHIP R 39 J 1/10W	
R695			RK73GB2A470J	CHIP R 47 J 1/10W	
R696			RK73GB2A271J	CHIP R 270 J 1/10W	
R697			RK73GB2A121J	CHIP R 120 J 1/10W	
R698,699			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R700			RK73GB2A121J	CHIP R 120 J 1/10W	
R701			RK73GB2A151J	CHIP R 150 J 1/10W	
R702			RK73GB2A153J	CHIP R 15K J 1/10W	
R704			RK73GB2A821J	CHIP R 820 J 1/10W	
R705,706			RK73GB2A470J	CHIP R 47 J 1/10W	
R707			RK73GB2A101J	CHIP R 100 J 1/10W	
R708			RK73GB2A104J	CHIP R 100K J 1/10W	
R711			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R713			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R714,715			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R716			RK73GB2A271J	CHIP R 270 J 1/10W	
R718			RK73GB2A180J	CHIP R 18 J 1/10W	

PARTS LIST

CONTROL UNIT (X53-446X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R720			RK73GB2A271J	CHIP R 270 J 1/10W	
R722			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R724			RK73GB2A821J	CHIP R 820 J 1/10W	
R725			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R727			RK73GB2A104J	CHIP R 100K J 1/10W	
R728			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R729			RK73GB2A821J	CHIP R 820 J 1/10W	
R801			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R802			RK73GB2A180J	CHIP R 18 J 1/10W	
R803			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R804			RK73GB2A470J	CHIP R 47 J 1/10W	
R805			RK73GB2A153J	CHIP R 15K J 1/10W	
R806			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R807			RK73GB2A272J	CHIP R 2.7K J 1/10W	
R808			RK73GB2A101J	CHIP R 100 J 1/10W	
R809			RK73GB2A221J	CHIP R 220 J 1/10W	
R810			RK73GB2A104J	CHIP R 100K J 1/10W	
R811			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R812			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R813			RK73GB2A221J	CHIP R 220 J 1/10W	
R815			RK73GB2A103J	CHIP R 10K J 1/10W	
R816			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R818,819			RK73GB2A122J	CHIP R 1.2K J 1/10W	
R820,821			RK73GB2A101J	CHIP R 100 J 1/10W	
R822,823			RK73GB2A153J	CHIP R 15K J 1/10W	
R824			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R825-829			RK73GB2A101J	CHIP R 100 J 1/10W	
R832			RK73GB2A473J	CHIP R 47K J 1/10W	
R833			RK73GB2A470J	CHIP R 47 J 1/10W	
R835			RK73GB2A180J	CHIP R 18 J 1/10W	
R836			RK73GB2A104J	CHIP R 100K J 1/10W	
R837			RN73GH1J221D	CHIP R 220 D 1/16W	
R838,839			RK73GB2A180J	CHIP R 18 J 1/10W	
R840			RN73GH1J151D	CHIP R 150 D 1/16W	
R841			RK73GB2A470J	CHIP R 47 J 1/10W	
R843			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R844			RK73GB2A101J	CHIP R 100 J 1/10W	
R846			RK73GB2A273J	CHIP R 27K J 1/10W	
R847			RK73GB2A393J	CHIP R 39K J 1/10W	
R849			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R850,851			RK73GB2A153J	CHIP R 15K J 1/10W	
R852			RK73GB2A101J	CHIP R 100 J 1/10W	
R853			RK73GB2A331J	CHIP R 330 J 1/10W	
R854			RK73GB2A101J	CHIP R 100 J 1/10W	
R856			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R858,859			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R860			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R861			RK73GB2A101J	CHIP R 100 J 1/10W	
R863			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R864,865			RK73GB2A151J	CHIP R 150 J 1/10W	
R866			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R867			RK73GB2A101J	CHIP R 100 J 1/10W	
R868			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R869			RK73GB2A101J	CHIP R 100 J 1/10W	
R870			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R871			RK73GB2A101J	CHIP R 100 J 1/10W	
R872			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R873			RK73GB2A470J	CHIP R 47 J 1/10W	
R874			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R875			RK73GB2A180J	CHIP R 18 J 1/10W	
R876			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R878			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R879			RK73GB2A101J	CHIP R 100 J 1/10W	
R880			RK73GB2A680J	CHIP R 68 J 1/10W	
R881			RK73GB2A101J	CHIP R 100 J 1/10W	
R882			RK73GB2A100J	CHIP R 10 J 1/10W	
R883			RK73GB2A101J	CHIP R 100 J 1/10W	
R884			RK73GB2A123J	CHIP R 12K J 1/10W	
R885			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R886			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R900-904			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R905,906			RK73GB2A101J	CHIP R 100 J 1/10W	
R907			RK73GB2A104J	CHIP R 100K J 1/10W	
R908,909			RK73GB2A101J	CHIP R 100 J 1/10W	
R910-913			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R914			RK73GB2A562J	CHIP R 5.6K J 1/10W	
R915			RK73GB2A223J	CHIP R 22K J 1/10W	
R916,917			RK73GB2A103J	CHIP R 10K J 1/10W	
R918,919			RK73GB2A153J	CHIP R 15K J 1/10W	
R920			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R921,922			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R923,924			RK73GB2A220J	CHIP R 22 J 1/10W	
R925			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R926			RK73GB2A103J	CHIP R 10K J 1/10W	
R927			RK73GB2A151J	CHIP R 150 J 1/10W	
R928			RK73GB2A101J	CHIP R 100 J 1/10W	
R929			RK73GB2A103J	CHIP R 10K J 1/10W	
R930			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R931			RK73GH2A123D	CHIP R 12K D 1/10W	
R932			RK73GB2A103J	CHIP R 10K J 1/10W	
R933,934			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R935			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R937			RK73GB2A103J	CHIP R 10K J 1/10W	
R939			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R941			RK73GB2A473J	CHIP R 47K J 1/10W	
R943			RK73GB2A473J	CHIP R 47K J 1/10W	
R946			RK73GB2A473J	CHIP R 47K J 1/10W	
R947			RK73GB2A104J	CHIP R 100K J 1/10W	
R948			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R949			RK73GB2A103J	CHIP R 10K J 1/10W	
R950,951			RK73GB2A104J	CHIP R 100K J 1/10W	
R952			RK73GB2A473J	CHIP R 47K J 1/10W	
R953			RK73GB2A103J	CHIP R 10K J 1/10W	
R957			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R958,959			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R960-963			RK73GB2A101J	CHIP R 100 J 1/10W	
R968			R92-1061-05	JUMPER REST 0 OHM	E
R970,971			RK73GB2A000J	CHIP R 0.0 J 1/10W	
D1,2			RB060L-40	DIODE	
D3-6			1SR154-400	DIODE	
D7-9			1SS348-F	DIODE	
D61			MINISMDC05002F	VARISTOR	
D62			1SS355	DIODE	
D101			1SS388F	DIODE	
D301			02DZ6.2F-Y	ZENER DIODE	
D302			1SS348-F	DIODE	
D304			1SR139-400	DIODE	
D501			HVC131	DIODE	
D651			HVC131	DIODE	

PARTS LIST

CONTROL UNIT (X53-446X-XX)
DISPLAY UNIT (X54-3700-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
D652			RB715F	DIODE	
D653-655			HVC131	DIODE	
D656		✻	MC2858-T111	DIODE	
D657			HVC131	DIODE	
D659-663			HVC131	DIODE	
D664-666			HSC277	DIODE	
D667			1SV312-F	DIODE	
D668-671			HVC131	DIODE	
D672		✻	MC2858-T111	DIODE	
D673			HSC277	DIODE	
D675			HSC277	DIODE	
D677,678			HSC277	DIODE	
D679-681			HVC131	DIODE	
D682,683			HSC277	DIODE	
D801-803			1SV283F	VARIABLE CAPACITANCE DIODE	
D901		✻	RSB12JS2	ZENER DIODE	
D902			HZU3BLL	ZENER DIODE	
D903			1SS388F	DIODE	
IC1,2			LT3685EMSE	ANALOGUE IC	
IC3			BA00DD0WHFP	ANALOGUE IC	
IC4			TA48M033F-F	ANALOGUE IC	
IC5			TA4805BF	MOS-IC	
IC6		✻	XC6220B12BPR-G	MOS-IC	
IC61-65			NJM2732V	BI-POLAR IC	
IC66		✻	AK5385BVF	MOS-IC	
IC67			LA4425A	MOS-IC	
IC68			TC7W66FK-F	MOS-IC	
IC69-71			NJM2732V	BI-POLAR IC	
IC72			AK4382AVT	MOS-IC	
IC73,74			NJM2100V-ZB	MOS-IC	
IC75			AK4387ET	MOS-IC	
IC76,77			NJM2100V-ZB	MOS-IC	
IC78			AK4387ET	MOS-IC	
IC79			NJM2732V	BI-POLAR IC	
IC80			TC7W66FK-F	MOS-IC	
IC81			NJM2732V	BI-POLAR IC	
IC82			NJM2100V-ZB	MOS-IC	
IC83		✻	WM8782SEDSRV	MOS-IC	
IC301		✻	DC6726BRFPA225	MICROPROCESSOR IC	
IC302		✻	29LV800CBKDNA	ROM IC	
IC304			TC7SH32FU-F	MOS-IC	
IC305			TC7SH00FU-F	MOS-IC	
IC306		✻	F3651RDFCKDTA	MICROCONTROLLER IC	
IC307			BU4829FVE	MOS-IC	
IC308			TC7SH32FU-F	MOS-IC	
IC309		✻	HN58X25128FPIE	ROM IC	
IC310			TC74HC4052AFT	MOS-IC	
IC311			HD74LV541AT	MOS-IC	
IC312			HD74LV2G34AUS	MOS-IC	
IC313			TC7WT125FUF	MOS-IC	
IC314			HD74LV2G34AUS	MOS-IC	
IC315			BU4829FVE	MOS-IC	
IC316,317			TC7SH32FU-F	MOS-IC	
IC501,502			TC7WT125FUF	MOS-IC	
IC504			TA4805BF	MOS-IC	
IC505			TA48M033F-F	ANALOGUE IC	
IC601			AD9835BRUZ	MOS-IC	
IC651			TC74HC4094AFF	MOS-IC	
IC801		✻	ADF4111BRUZ	MOS-IC	
IC802		✻	XC6219B182PR-G	MOS-IC	
IC803		✻	AD9951YSVZ	MOS-IC	
IC804			UPC2710TB-A	ANALOGUE IC	
IC901			ADM3202ARUZ	MOS-IC	
IC902			TC75S51FE(F)	MOS-IC	
IC903		✻	PCM2903B	MOS-IC	
IC904			TC7SH08FU-F	MOS-IC	
IC905		✻	USB2512BI	MOS-IC	
IC906		✻	CP2102SX0567	MOS-IC	
Q1			RT1N141U-T111	TRANSISTOR	
Q2,3		✻	TPC6111-F	FET	
Q4			RT1N430M-T111	TRANSISTOR	
Q61			2SC5566-E	TRANSISTOR	
Q62			2SK1824-A	FET	
Q63		✻	RT1N234U-T111	TRANSISTOR	
Q64		✻	RT5P431C-T112	TRANSISTOR	
Q65			2SC5383-T111	TRANSISTOR	
Q66		✻	RT1N234U-T111	TRANSISTOR	
Q67		✻	RT5P431C-T112	TRANSISTOR	
Q501,502			2SC5383-T111	TRANSISTOR	
Q503			2SC5108(Y)F	TRANSISTOR	
Q504,505			2SC4617(R)	TRANSISTOR	
Q506			2SC4649(N,P)	TRANSISTOR	
Q601,602			2SC5383-T111	TRANSISTOR	
Q651			RT1P141U-T111	TRANSISTOR	
Q652			RT1N441U-T111	TRANSISTOR	
Q653			RT1P141U-T111	TRANSISTOR	
Q654			RT1N441U-T111	TRANSISTOR	
Q655			RT1P141U-T111	TRANSISTOR	
Q656			RT1N441U-T111	TRANSISTOR	
Q657			RT1P141U-T111	TRANSISTOR	
Q658			RT1N441U-T111	TRANSISTOR	
Q659			RT1P141U-T111	TRANSISTOR	
Q660			RT1N441U-T111	TRANSISTOR	
Q661			RT1P141U-T111	TRANSISTOR	
Q662			RT1N441U-T111	TRANSISTOR	
Q663			2SC5108(Y)F	TRANSISTOR	
Q664			RN47A5-F	TRANSISTOR	
Q801			2SC4649(N,P)	TRANSISTOR	
Q802			2SJ243-A	FET	
Q803			UMX2N	TRANSISTOR	
Q804			2SC5108(Y)F	TRANSISTOR	
Q805			2SC5383-T111	TRANSISTOR	
Q806			MCH3914(7)-H	FET	
Q807,808			2SC5108(Y)F	TRANSISTOR	
Q901			RN47A5-F	TRANSISTOR	
Q902-904			HN7G01FU-F	TRANSISTOR	

DISPLAY UNIT (X54-3700-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
301	1E	✻	B11-1878-02	ILLUMINATION GUIDE	
302	1E	✻	B11-1882-03	FILTER	
303	1E	✻	B38-0934-05	LCD	
D101-115		✻	B30-2323-05	LED (GREEN)	
D123-160		✻	B30-2323-05	LED (GREEN)	
D161-213		✻	B30-2322-05	LED (AMBER)	
D214			B30-2167-05	LED (GR)	
D215			B30-2168-05	LED (R)	
D216		✻	B30-2323-05	LED (GREEN)	
D217		✻	B30-2322-05	LED (AMBER)	

PARTS LIST

DISPLAY UNIT (X54-3700-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti- nation
D961			B30-2146-05	LED (OR)	
C101			CK73GB1H102K	CHIP C 1000PF K	
C102			CK73FB0J106K	CHIP C 10UF K	
C103			CK73GB1H102K	CHIP C 1000PF K	
C104			CK73FB0J106K	CHIP C 10UF K	
C105,106			CK73GB1H104K	CHIP C 0.10UF K	
C107			CK73GB1H103K	CHIP C 0.010UF K	
C108			CK73GB1H471K	CHIP C 470PF K	
C109			CK73GB1H102K	CHIP C 1000PF K	
C110-112			CK73GB1H104K	CHIP C 0.10UF K	
C113			CK73GB1H102K	CHIP C 1000PF K	
C114			CK73GB1H104K	CHIP C 0.10UF K	
C115			C93-0912-05	CHIP C 100UF M	
C116			CK73GB1H102K	CHIP C 1000PF K	
C117,118			CC73GCH1H030B	CHIP C 3.0PF B	
C119-121			CK73GB1H104K	CHIP C 0.10UF K	
C122-124			CK73GB1H102K	CHIP C 1000PF K	
C125			CK73GB1A105K	CHIP C 1.0UF K	
C126,127			CK73GB1H102K	CHIP C 1000PF K	
C128			CK73GB1A105K	CHIP C 1.0UF K	
C129-136			CK73GB1H102K	CHIP C 1000PF K	
C137			CK73GB1A105K	CHIP C 1.0UF K	
C138-150			CK73GB1H102K	CHIP C 1000PF K	
C151-153			CE32BM1C101M	CHIP EL 100UF 16WV	
C154,155			C93-0912-05	CHIP C 100UF M	
C157			CK73GB1H222K	CHIP C 2200PF K	
C159			CK73GB1H222K	CHIP C 2200PF K	
C161			CK73GB1H222K	CHIP C 2200PF K	
C163			CK73GB1H222K	CHIP C 2200PF K	
C164			CK73GB1H103K	CHIP C 0.010UF K	
C169			CK73GB1H103K	CHIP C 0.010UF K	
C171			CK73GB1H103K	CHIP C 0.010UF K	
C950,951			CK73GB1H103K	CHIP C 0.010UF K	
C952-955			CK73FB1C105K	CHIP C 1.0UF K	
C956-959			CK73GB1H103K	CHIP C 0.010UF K	
C973			CK73GB1A474K	CHIP C 0.47UF K	
304	2F		E23-1176-04	EARTH LUG	
305	1E	✻	E29-1230-04	INTER CONNECTOR	
306	2F		E37-1511-05	PROCESSED LEAD WIRE	
CN101			E40-6727-05	FLAT CABLE CONNECTOR	
CN102			E40-6527-05	PIN ASSY	
CN103			E41-1684-05	PIN ASSY	
CN104		✻	E41-1775-05	PIN ASSY	
CN105			E40-6765-05	PIN ASSY	
CN106			E40-6708-05	PIN ASSY	
CN107		✻	E40-6879-05	FLAT CABLE CONNECTOR	
CN951			E41-1687-05	PIN ASSY	
CN953			E40-6766-05	PIN ASSY	
CN964			E41-1701-05	PIN ASSY	
CN965		✻	E41-1775-05	PIN ASSY	
CN966			E40-6710-05	PIN ASSY	
J950	2F		E06-0858-25	RF COAXIAL RECEPTACLE (ROUND)	
J951	2F	✻	E11-0705-15	PHONE JACK (9P)	
307	1E	✻	J21-8620-13	MOUNTING HARDWARE	
L101-105			L92-0639-05	CHIP FERRITE	
L106		✻	L33-1556-05	CHOKE COIL	
L107,108		✻	L33-1554-05	CHOKE COIL	
L109			L92-0639-05	CHIP FERRITE	
X101		✻	L77-3069-05	CRYSTAL RESONATOR (11.0592MHZ)	
CP101,102			RK74GB1J102J	CHIP-COM 1.0K J 1/16W	
CP103,104			RK74GB1J103J	CHIP-COM 10K J 1/16W	
CP105			RK74GB1J473J	CHIP-COM 47K J 1/16W	
CP106			RK74GB1J101J	CHIP-COM 100 J 1/16W	
CP107			RK74GB1J473J	CHIP-COM 47K J 1/16W	
R101,102			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R103			RK73GB2A473J	CHIP R 47K J 1/10W	
R104			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R105			RK73GB2A103J	CHIP R 10K J 1/10W	
R106-108			RK73GB2A680J	CHIP R 68 J 1/10W	
R109			RK73GB2A103J	CHIP R 10K J 1/10W	
R110,111			RK73GB2A680J	CHIP R 68 J 1/10W	
R112			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R113-119			RK73GB2A680J	CHIP R 68 J 1/10W	
R120			RK73GB2A473J	CHIP R 47K J 1/10W	
R121			RK73GB2A103J	CHIP R 10K J 1/10W	
R122,123			RK73GB2A680J	CHIP R 68 J 1/10W	
R124			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R125			RK73GB2A680J	CHIP R 68 J 1/10W	
R126,127			RK73GB2A473J	CHIP R 47K J 1/10W	
R128			RK73GB2A680J	CHIP R 68 J 1/10W	
R130			RK73GB2A473J	CHIP R 47K J 1/10W	
R131,132			RK73GB2A680J	CHIP R 68 J 1/10W	
R133-135			RK73GB2A473J	CHIP R 47K J 1/10W	
R136			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R137			RK73GB2A473J	CHIP R 47K J 1/10W	
R138			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R139-141			RK73GB2A473J	CHIP R 47K J 1/10W	
R142			RK73GB2A121J	CHIP R 120 J 1/10W	
R143			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R144,145			RK73GB2A121J	CHIP R 120 J 1/10W	
R146			RK73GB2A103J	CHIP R 10K J 1/10W	
R147,148			RK73GB2A121J	CHIP R 120 J 1/10W	
R149			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R150-153			RK73GB2A121J	CHIP R 120 J 1/10W	
R154-159			RK73GB2A473J	CHIP R 47K J 1/10W	
R160			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R161			RK73GB2A154J	CHIP R 150K J 1/10W	
R162,163			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R164-166			RK73GB2A121J	CHIP R 120 J 1/10W	
R167			RK73GB2A103J	CHIP R 10K J 1/10W	
R168,169			RK73GB2A121J	CHIP R 120 J 1/10W	
R170			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R171			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R172			RK73GB2A121J	CHIP R 120 J 1/10W	
R173			RK73GB2A473J	CHIP R 47K J 1/10W	
R174			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R175-177			RK73GB2A121J	CHIP R 120 J 1/10W	
R178			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R179,180			RK73GB2A561J	CHIP R 560 J 1/10W	
R181-190			RK73GB2A101J	CHIP R 100 J 1/10W	
R191,192			RK73GB2A473J	CHIP R 47K J 1/10W	
R193-209			RK73GB2A101J	CHIP R 100 J 1/10W	
R210,211			RK73GB2A470J	CHIP R 47 J 1/10W	
R212-215			RK73GB2A101J	CHIP R 100 J 1/10W	
R216			RK73GB2A121J	CHIP R 120 J 1/10W	
R217			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R218-221			RK73GB2A102J	CHIP R 1.0K J 1/10W	

PARTS LIST

DISPLAY UNIT (X54-3700-00)
TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R952-955			RK73FB2B470J	CHIP R 47 J 1/8W	
R975			R92-1205-05	CHIP R 120 J 1/4W	
R977			R92-1205-05	CHIP R 120 J 1/4W	
VR953,954	1F	✻	R31-0677-05	VARIABLE RESISTOR	
S101-156			S70-0475-15	TACT SWITCH	
S952	2F		T99-0653-05	ROTARY ENCODER	
D116-122			MA2S111-F	DIODE	
D218			1SS388F	DIODE	
IC101		✻	LC75897PW	MOS-IC	
IC102			TC7W125FU-F	MOS-IC	
IC103		✻	F364AEDFBKDUA	MICROCONTROLLER IC	
IC104			TC7W125FU-F	MOS-IC	
IC105,106			HD74LV2G34AUS	MOS-IC	
Q101			2SD2114K(W)	TRANSISTOR	
Q102			RN47A5-F	TRANSISTOR	
Q103-105			2SD2114K(W)	TRANSISTOR	
Q106			UMG1N	TRANSISTOR	
Q107			RT1N141U-T111	TRANSISTOR	
S953	1F	✻	W02-3737-05	ENCODER	

TX-RX UNIT (X57-785X-XX) 0-11: K 2-71: E

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
D521			B30-2001-05	LED (RE)	
D810			B30-2001-05	LED (RE)	
C10,11			CK73GB1E105K	CHIP C 1.0UF K	
C12			CK73GB1H102K	CHIP C 1000PF K	
C15			CK73GB1H103K	CHIP C 0.010UF K	
C17			CK73GB1H103K	CHIP C 0.010UF K	
C19			CK73GB1H103K	CHIP C 0.010UF K	
C21			CK73GB1H103K	CHIP C 0.010UF K	
C23			CK73GB1H103K	CHIP C 0.010UF K	
C25			CK73GB1H103K	CHIP C 0.010UF K	
C27			CK73GB1H103K	CHIP C 0.010UF K	
C39,40			CK73GB1H103K	CHIP C 0.010UF K	
C42,43			CK73GB1H104K	CHIP C 0.10UF K	
C49,50			CK73GB1H104K	CHIP C 0.10UF K	
C52			CD04AZ1V101M	ELECTRO 100UF 35WV	
C54			CS77CA1A4R7M	CHIP TNTL 4.7UF 10WV	
C56			CK73GB1E105K	CHIP C 1.0UF K	
C57			CS77CA1A4R7M	CHIP TNTL 4.7UF 10WV	
C58			CK73FB1H102K	CHIP C 1000PF K	
C59			CK73GB1H103K	CHIP C 0.010UF K	
C60			CK73GB1H102K	CHIP C 1000PF K	
C61,62			CK73FB1H102K	CHIP C 1000PF K	
C63			CK73GB1H102K	CHIP C 1000PF K	
C64,65			CK73GB1H103K	CHIP C 0.010UF K	
C66-78			CK73GB1H104K	CHIP C 0.10UF K	
C79		✻	CK45FE3A222Z	CERAMIC 2200PF Z	
C80			CK73FB1H103K	CHIP C 0.010UF K	
C81-83			CK73FB1H102K	CHIP C 1000PF K	
C84			CK73GB1H103K	CHIP C 0.010UF K	
C85-88			CK73GB1H102K	CHIP C 1000PF K	
C97			CK73GB1E105K	CHIP C 1.0UF K	
C98			CK73GB1H102K	CHIP C 1000PF K	
C101-104			CK73GB1H103K	CHIP C 0.010UF K	
C106			CD04AZ1E471M	ELECTRO 470UF 25WV	
C107			CC73GCH1H560J	CHIP C 56PF J	
C108			CK73GB1H102K	CHIP C 1000PF K	
C109			CC73GCH1H090D	CHIP C 9.0PF D	
C110			CC73GCH1H560J	CHIP C 56PF J	
C111			CK73GB1H104K	CHIP C 0.10UF K	
C112			CK73EB1H104K	CHIP C 0.10UF K	
C113			CK73GB1H102K	CHIP C 1000PF K	
C114			CK73EB1H104K	CHIP C 0.10UF K	
C115-118			CK73GB1H103K	CHIP C 0.010UF K	
C119			CK73GB1E105K	CHIP C 1.0UF K	
C120			CK73GB1H104K	CHIP C 0.10UF K	
C121			CC73GCH1H152J	CHIP C 1500PF J	
C122		✻	CC73FCH1H472J	CHIP C 4700PF J	
C123			CC73GCH1H152J	CHIP C 1500PF J	
C127			CC73GCH1H180J	CHIP C 18PF J	
C128,129			CC73GCH1H271J	CHIP C 270PF J	
C130			CC73GCH1H330J	CHIP C 33PF J	
C131			CC73GCH1H222J	CHIP C 2200PF J	
C132		✻	CC73FCH1H472J	CHIP C 4700PF J	
C133			CC73GCH1H221J	CHIP C 220PF J	
C134,135			CK73GB1H104K	CHIP C 0.10UF K	
C136			CC73GCH1H120J	CHIP C 12PF J	
C137			CC73GCH1H222J	CHIP C 2200PF J	
C138			CK73GB1H103K	CHIP C 0.010UF K	
C139		✻	CC73FCH1H392J	CHIP C 3900PF J	
C140			CK73GB1H104K	CHIP C 0.10UF K	
C141			CC73GCH1H222J	CHIP C 2200PF J	
C142			CK73GB1H104K	CHIP C 0.10UF K	
C143			CC73GCH1H102J	CHIP C 1000PF J	
C144			CK73GB1H104K	CHIP C 0.10UF K	
C145			CC73GCH1H102J	CHIP C 1000PF J	
C146			CK73GB1H104K	CHIP C 0.10UF K	
C147			CC73GCH1H102J	CHIP C 1000PF J	
C148			CK73GB1H104K	CHIP C 0.10UF K	
C149			CC73GCH1H271J	CHIP C 270PF J	
C150			CK73GB1H104K	CHIP C 0.10UF K	
C151			CC73GCH1H151J	CHIP C 150PF J	
C152			CK73GB1H104K	CHIP C 0.10UF K	
C153			CC73GCH1H220J	CHIP C 22PF J	
C154			CK73GB1H104K	CHIP C 0.10UF K	
C155,156			CC73GCH1H102J	CHIP C 1000PF J	
C157			CC73GCH1H100D	CHIP C 10PF D	
C158			CC73GCH1H040C	CHIP C 4.0PF C	
C159			CK73GB1E105K	CHIP C 1.0UF K	
C160-166			CC73GCH1H102J	CHIP C 1000PF J	
C167,168			CK73GB1H104K	CHIP C 0.10UF K	
C169			CK73GB1H103K	CHIP C 0.010UF K	
C170			CK73GB1H223K	CHIP C 0.022UF K	
C171			CK73GB1E105K	CHIP C 1.0UF K	
C172			CC73GCH1H040C	CHIP C 4.0PF C	
C173			CC73GCH1H102J	CHIP C 1000PF J	
C174			CC73GCH1H561J	CHIP C 560PF J	
C175			CC73GCH1H271J	CHIP C 270PF J	
C176			CC73GCH1H121J	CHIP C 120PF J	
C177			CC73GCH1H820J	CHIP C 82PF J	
C178			CC73GCH1H680J	CHIP C 68PF J	
C179			CC73GCH1H390J	CHIP C 39PF J	
C180			CC73GCH1H470J	CHIP C 47PF J	
C181			CC73GCH1H102J	CHIP C 1000PF J	
C182			CC73GCH1H100D	CHIP C 10PF D	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description			Desti-nation
C183,184			CC73GCH1H102J	CHIP C	1000PF	J	
C185			CK73GB1E105K	CHIP C	1.0UF	K	
C186-190			CC73GCH1H102J	CHIP C	1000PF	J	
C191			CK73GB1H102K	CHIP C	1000PF	K	
C192,193			CC73GCH1H102J	CHIP C	1000PF	J	
C194,195			CK73GB1H103K	CHIP C	0.010UF	K	
C196,197			CK73GB1H104K	CHIP C	0.10UF	K	
C198			CC73GCH1H060D	CHIP C	6.0PF	D	
C199		*	CC73FCH1H332J	CHIP C	3300PF	J	
C200			CK73GB1H104K	CHIP C	0.10UF	K	
C201			CC73GCH1H222J	CHIP C	2200PF	J	
C202			CK73GB1H104K	CHIP C	0.10UF	K	
C203			CC73GCH1H102J	CHIP C	1000PF	J	
C204			CK73GB1H104K	CHIP C	0.10UF	K	
C205			CC73GCH1H102J	CHIP C	1000PF	J	
C206			CK73GB1H104K	CHIP C	0.10UF	K	
C207			CC73GCH1H102J	CHIP C	1000PF	J	
C208			CK73GB1H104K	CHIP C	0.10UF	K	
C209			CC73GCH1H331J	CHIP C	330PF	J	
C210			CK73GB1H104K	CHIP C	0.10UF	K	
C211			CC73GCH1H181J	CHIP C	180PF	J	
C212			CK73GB1H104K	CHIP C	0.10UF	K	
C214			CK73GB1H104K	CHIP C	0.10UF	K	
C215			CK73GB1E105K	CHIP C	1.0UF	K	
C216			CK73GB1H104K	CHIP C	0.10UF	K	
C231			CK73GB1H103K	CHIP C	0.010UF	K	
C232			CK73GB1E105K	CHIP C	1.0UF	K	
C233			CC73GCH1H102J	CHIP C	1000PF	J	
C234			CK73GB1E105K	CHIP C	1.0UF	K	
C235			CK73GB1H103K	CHIP C	0.010UF	K	
C236			CC73GCH1H101J	CHIP C	100PF	J	
C237			CK73GB1H104K	CHIP C	0.10UF	K	
C238			CK73GB1H102K	CHIP C	1000PF	K	
C239			CK73GB1H472K	CHIP C	4700PF	K	
C240			CK73GB1E105K	CHIP C	1.0UF	K	
C241,242			CK73GB1H103K	CHIP C	0.010UF	K	
C243,244			CK73GB1E105K	CHIP C	1.0UF	K	
C245			CC73GCH1H102J	CHIP C	1000PF	J	
C246			CK73GB1H103K	CHIP C	0.010UF	K	
C247			CK73GB1E105K	CHIP C	1.0UF	K	
C248			CC73GCH1H102J	CHIP C	1000PF	J	
C249			CK73GB1H103K	CHIP C	0.010UF	K	
C250			CC73GCH1H470J	CHIP C	47PF	J	
C251,252			CC73GCH1H560J	CHIP C	56PF	J	
C253			CC73GCH1H820J	CHIP C	82PF	J	
C254			CC73GCH1H680J	CHIP C	68PF	J	
C255,256			CC73GCH1H330J	CHIP C	33PF	J	
C257			CC73GCH1H151J	CHIP C	150PF	J	
C258			CC73GCH1H470J	CHIP C	47PF	J	
C259			CC73GCH1H221J	CHIP C	220PF	J	
C260			CC73GCH1H681J	CHIP C	680PF	J	
C261-263			CK73GB1H104K	CHIP C	0.10UF	K	
C265			CK73GB1H103K	CHIP C	0.010UF	K	
C266			CK73GB1H102K	CHIP C	1000PF	K	
C268			CK73GB1H104K	CHIP C	0.10UF	K	
C269			CE32CL1C100M	CHIP EL	10UF	16WV	
C270			CK73GB1H104K	CHIP C	0.10UF	K	
C272			CC73GCH1H471J	CHIP C	470PF	J	
C273			CK73GB1H102K	CHIP C	1000PF	K	
C274			CK73GB1H103K	CHIP C	0.010UF	K	
C281			CK73GB1H103K	CHIP C	0.010UF	K	
C282,283			CK73GB1H104K	CHIP C	0.10UF	K	
C284			CK73GB1H103K	CHIP C	0.010UF	K	
C286			CK73GB1H472K	CHIP C	4700PF	K	
C287			CK73GB1H103K	CHIP C	0.010UF	K	
C288			CK73GB1H104K	CHIP C	0.10UF	K	
C289			CK73GB1H472K	CHIP C	4700PF	K	
C290			CK73GB1H104K	CHIP C	0.10UF	K	
C301			CC73GCH1H150J	CHIP C	15PF	J	
C302			CC73GCH1H390J	CHIP C	39PF	J	
C303			CC73GCH1H470J	CHIP C	47PF	J	
C305			CC73GCH1H220J	CHIP C	22PF	J	
C307			CK73GB1H103K	CHIP C	0.010UF	K	
C321			CC73GCH1H560J	CHIP C	56PF	J	
C322			CC73GCH1H330J	CHIP C	33PF	J	
C323			CC73GCH1H820J	CHIP C	82PF	J	
C324			CC73GCH1H390J	CHIP C	39PF	J	
C325			CC73GCH1H270J	CHIP C	27PF	J	
C326-328			CK73GB1H104K	CHIP C	0.10UF	K	
C330			CK73GB1H103K	CHIP C	0.010UF	K	
C335			CC73GCH1H020C	CHIP C	2.0PF	C	
C336			CK73GB1H104K	CHIP C	0.10UF	K	
C337			CC73GCH1H471J	CHIP C	470PF	J	
C338			CK73GB1H102K	CHIP C	1000PF	K	
C339			CK73GB1H103K	CHIP C	0.010UF	K	
C341			CK73GB1H102K	CHIP C	1000PF	K	
C342			CC73GCH1H020C	CHIP C	2.0PF	C	
C343,344			CC73GCH1H102J	CHIP C	1000PF	J	
C350			CC73GCH1H180J	CHIP C	18PF	J	
C351			CK73GB1H103K	CHIP C	0.010UF	K	
C352,353			CK73GB1H104K	CHIP C	0.10UF	K	
C354			CC73GCH1H060D	CHIP C	6.0PF	D	
C355			CK73GB1H103K	CHIP C	0.010UF	K	
C356			CK73GB1H472K	CHIP C	4700PF	K	
C357			CK73GB1H103K	CHIP C	0.010UF	K	
C358,359			CK73GB1H104K	CHIP C	0.10UF	K	
C360			CK73GB1H472K	CHIP C	4700PF	K	
C361,362			CC73GCH1H270J	CHIP C	27PF	J	
C363			CK73GB1H104K	CHIP C	0.10UF	K	
C373			CK73GB1H102K	CHIP C	1000PF	K	
C374,375			CC73GCH1H010C	CHIP C	1.0PF	C	
C377			CK73GB1H102K	CHIP C	1000PF	K	
C391,392			CK73GB1H103K	CHIP C	0.010UF	K	
C395			CK73GB1E105K	CHIP C	1.0UF	K	
C396			CC73GCH1H090D	CHIP C	9.0PF	D	
C397			CK73GB1H103K	CHIP C	0.010UF	K	
C398			CK73GB1E105K	CHIP C	1.0UF	K	
C399			CK73GB1H103K	CHIP C	0.010UF	K	
C401			CK73GB1H103K	CHIP C	0.010UF	K	
C402			CC73GCH1H020C	CHIP C	2.0PF	C	
C412,413			CK73GB1H103K	CHIP C	0.010UF	K	
C421			CK73GB1H103K	CHIP C	0.010UF	K	
C423			CC73GCH1H220J	CHIP C	22PF	J	
C424-426			CK73GB1H103K	CHIP C	0.010UF	K	
C428,429			CC73GCH1H330J	CHIP C	33PF	J	
C431			CK73GB1H103K	CHIP C	0.010UF	K	
C432			CK73GB1H102K	CHIP C	1000PF	K	
C433			CK73GB1H103K	CHIP C	0.010UF	K	
C434			CC73GCH1H090D	CHIP C	9.0PF	D	
C435			CK73GB1H103K	CHIP C	0.010UF	K	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description			Desti- nation
C436			CK73GB1E105K	CHIP C	1.0UF	K	
C440,441			CC73GCH1H151J	CHIP C	150PF	J	
C442-449			CK73GB1H103K	CHIP C	0.010UF	K	
C450			CC73GCH1H150J	CHIP C	15PF	J	
C451-453			CK73GB1H103K	CHIP C	0.010UF	K	
C454			CK73GB1H104K	CHIP C	0.10UF	K	
C455			CK73GB1E105K	CHIP C	1.0UF	K	
C456,457			CK73GB1H103K	CHIP C	0.010UF	K	
C458			CC73GCH1H121J	CHIP C	120PF	J	
C459			CK73GB1E105K	CHIP C	1.0UF	K	
C460			CC73GCH1H101J	CHIP C	100PF	J	
C461			CC73GCH1H820J	CHIP C	82PF	J	
C462,463			CK73GB1H103K	CHIP C	0.010UF	K	
C464			CC73GCH1H820J	CHIP C	82PF	J	
C465			CC73GCH1H101J	CHIP C	100PF	J	
C466			CK73GB1H104K	CHIP C	0.10UF	K	
C467			CK73GB1H102K	CHIP C	1000PF	K	
C468,469			CC73GCH1H100D	CHIP C	10PF	D	
C470			CC73GCH1H151J	CHIP C	150PF	J	
C471-475			CK73GB1H103K	CHIP C	0.010UF	K	
C476			CC73GCH1H820J	CHIP C	82PF	J	
C477			CC73GCH1H680J	CHIP C	68PF	J	
C478			CC73GCH1H820J	CHIP C	82PF	J	
C479			CC73GCH1H101J	CHIP C	100PF	J	
C480			CK73GB1H103K	CHIP C	0.010UF	K	
C481,482			CC73GCH1H390J	CHIP C	39PF	J	
C483			CC73GCH1H470J	CHIP C	47PF	J	
C484			CC73GCH1H220J	CHIP C	22PF	J	
C485			CC73GCH1H030C	CHIP C	3.0PF	C	
C486			CC73GCH1H060D	CHIP C	6.0PF	D	
C490			CC73GCH1H180J	CHIP C	18PF	J	
C494,495			CC73GCH1H060D	CHIP C	6.0PF	D	
C496			CC73GCH1H220J	CHIP C	22PF	J	
C497			CC73GCH1H390J	CHIP C	39PF	J	
C498			CC73GCH1H470J	CHIP C	47PF	J	
C499			CC73GCH1H270J	CHIP C	27PF	J	
C500			CK73GB1H103K	CHIP C	0.010UF	K	
C501			CC73GCH1H820J	CHIP C	82PF	J	
C502			CC73GCH1H680J	CHIP C	68PF	J	
C503			CC73GCH1H121J	CHIP C	120PF	J	
C504			CC73GCH1H101J	CHIP C	100PF	J	
C505-509			CK73GB1H103K	CHIP C	0.010UF	K	
C521			CC73GCH1H271J	CHIP C	270PF	J	
C522			CC73GCH1H681J	CHIP C	680PF	J	
C523-530			CK73GB1H103K	CHIP C	0.010UF	K	
C531			CK73GB1E105K	CHIP C	1.0UF	K	
C532			CK73GB1H104K	CHIP C	0.10UF	K	
C533-536			CK73GB1H103K	CHIP C	0.010UF	K	
C537			CK73GB1H104K	CHIP C	0.10UF	K	
C538			CK73GB1E105K	CHIP C	1.0UF	K	
C539			CK73GB1H103K	CHIP C	0.010UF	K	
C540			CK73GB1H104K	CHIP C	0.10UF	K	
C541-543			CK73GB1H103K	CHIP C	0.010UF	K	
C544			CC73GCH1H151J	CHIP C	150PF	J	
C545			CK73GB1H103K	CHIP C	0.010UF	K	
C546			CK73GB1H104K	CHIP C	0.10UF	K	
C547,548			CK73GB1H103K	CHIP C	0.010UF	K	
C551			CK73GB1H103K	CHIP C	0.010UF	K	
C552			CC73GCH1H470J	CHIP C	47PF	J	
C553,554			CK73GB1H103K	CHIP C	0.010UF	K	
C555			CC73GCH1H101J	CHIP C	100PF	J	
C556			CK73GB1E105K	CHIP C	1.0UF	K	
C557			CK73GB1H103K	CHIP C	0.010UF	K	
C558-560			CK73GB1E105K	CHIP C	1.0UF	K	
C569			CK73GB1H103K	CHIP C	0.010UF	K	
C570			CK73GB1E105K	CHIP C	1.0UF	K	
C571-575			CK73GB1H103K	CHIP C	0.010UF	K	
C576			CK73GB1H102K	CHIP C	1000PF	K	
C577			CK73GB1H103K	CHIP C	0.010UF	K	
C578			CC73GCH1H121J	CHIP C	120PF	J	
C579			CC73GCH1H181J	CHIP C	180PF	J	
C580			CC73GCH1H331J	CHIP C	330PF	J	
C581			CK73GB1H102K	CHIP C	1000PF	K	
C591			CK73GB1H104K	CHIP C	0.10UF	K	
C592			CE32CL1C220M	CHIP EL	22UF	16WV	
C593			CK73GB1H103K	CHIP C	0.010UF	K	
C594			CE32CL1C220M	CHIP EL	22UF	16WV	
C595			CK73GB1H104K	CHIP C	0.10UF	K	
C597-599			CK73GB1H104K	CHIP C	0.10UF	K	
C600			CK73GB1H103K	CHIP C	0.010UF	K	
C601			CC73GCH1H820J	CHIP C	82PF	J	
C602-606			CK73GB1H104K	CHIP C	0.10UF	K	
C608,609			CK73GB1H104K	CHIP C	0.10UF	K	
C610			CC73GCH1H270J	CHIP C	27PF	J	
C611,612			CC73GCH1H271J	CHIP C	270PF	J	
C613			CC73GCH1H391J	CHIP C	390PF	J	
C614			CK73FB1A106K	CHIP C	10UF	K	
C615,616			CK73GB1E105K	CHIP C	1.0UF	K	
C618			CC73GCH1H331J	CHIP C	330PF	J	
C619			CK73GB1H104K	CHIP C	0.10UF	K	
C620			CK73GB1H223K	CHIP C	0.022UF	K	
C621			CK73GB1H222K	CHIP C	2200PF	K	
C625-628			CK73GB1H103K	CHIP C	0.010UF	K	
C630			CK73FB1A106K	CHIP C	10UF	K	
C631			CK73GB1E105K	CHIP C	1.0UF	K	
C632			CK73FB1A106K	CHIP C	10UF	K	
C633			CK73GB1H103K	CHIP C	0.010UF	K	
C634			CK73GB1E105K	CHIP C	1.0UF	K	
C635,636			CK73GB1H103K	CHIP C	0.010UF	K	
C638			CK73GB1H102K	CHIP C	1000PF	K	
C639,640			CK73GB1H103K	CHIP C	0.010UF	K	
C648			CC73GCH1H100D	CHIP C	10PF	D	
C649			CC73GCH1H020C	CHIP C	2.0PF	C	
C650			CK73GB1H103K	CHIP C	0.010UF	K	
C651			CK73GB1H102K	CHIP C	1000PF	K	
C652,653			CK73GB1H103K	CHIP C	0.010UF	K	
C654			CC73GCH1H470J	CHIP C	47PF	J	
C656			CK73GB1H103K	CHIP C	0.010UF	K	
C657			CK73GB1E105K	CHIP C	1.0UF	K	
C658			CC73GCH1H430J	CHIP C	43PF	J	
C659			CC73GCH1H080D	CHIP C	8.0PF	D	
C660			CK73GB1H222K	CHIP C	2200PF	K	
C661			CK73GB1H332K	CHIP C	3300PF	K	
C662			CD04AZ1H470M	ELECTRO	47UF	50WV	
C663			CK73GB1H103K	CHIP C	0.010UF	K	
C664,665			CD04AZ1H470M	ELECTRO	47UF	50WV	
C666			CK73GB1H103K	CHIP C	0.010UF	K	
C668			CK73GB1H103K	CHIP C	0.010UF	K	
C670,671			CK73GB1H103K	CHIP C	0.010UF	K	
C673			CK73GB1H103K	CHIP C	0.010UF	K	

PARTS LIST

Ref. No.	Address	New parts	Parts No.	Description	Desti- nation
C674			CS77CA1VR47M	CHIP TNTL 0.47UF 35WV	
C675			CK73GB1H103K	CHIP C 0.010UF K	
C679,680			CK73GB1H103K	CHIP C 0.010UF K	
C681			CC73GCH1H100D	CHIP C 10PF D	
C682			CK73GB1H103K	CHIP C 0.010UF K	
C683			CK73GB1H102K	CHIP C 1000PF K	
C684			CK73GB1H103K	CHIP C 0.010UF K	
C686			CK73GB1E105K	CHIP C 1.0UF K	
C687			CK73GB1H103K	CHIP C 0.010UF K	
C688			CE32CL1C470M	CHIP EL 47UF 16WV	
C689			CK73GB1E105K	CHIP C 1.0UF K	
C691			CC73GCH1H360J	CHIP C 36PF J	
C692			CC73GCH1H390J	CHIP C 39PF J	
C693			CC73GCH1H100D	CHIP C 10PF D	
C694			CC73GCH1H090D	CHIP C 9.0PF D	
C701			CC73GCH1H100D	CHIP C 10PF D	
C702			CK73GB1E105K	CHIP C 1.0UF K	
C703			CK73GB1H473K	CHIP C 0.047UF K	
C704			CK73GB1E105K	CHIP C 1.0UF K	
C705			CC73GCH1H180J	CHIP C 18PF J	
C706-713			CK73GB1H103K	CHIP C 0.010UF K	
C714			CE32CL1C100M	CHIP EL 10UF 16WV	
C715,716			CK73GB1H103K	CHIP C 0.010UF K	
C717			CC73GCH1H102J	CHIP C 1000PF J	
C720			CK73GB1E105K	CHIP C 1.0UF K	
C721-723			CK73GB1H103K	CHIP C 0.010UF K	
C724			CC73GCH1H050C	CHIP C 5.0PF C	
C725			CC73GCH1H560J	CHIP C 56PF J	
C726			CK73GB1E105K	CHIP C 1.0UF K	
C728,729			CK73GB1H103K	CHIP C 0.010UF K	
C731,732			CK73GB1H103K	CHIP C 0.010UF K	
C733			CC73GCH1H220J	CHIP C 22PF J	
C734			CK73GB1H103K	CHIP C 0.010UF K	
C735			CC73GCH1H330J	CHIP C 33PF J	
C741-743			CK73GB1H102K	CHIP C 1000PF K	
C744			CK73GB1H103K	CHIP C 0.010UF K	
C745			CC73GCH1H470J	CHIP C 47PF J	
C746			CK73GB1H102K	CHIP C 1000PF K	
C747			CK73GB1H104K	CHIP C 0.10UF K	
C748			CK73GB1H102K	CHIP C 1000PF K	
C749			CK73GB1H103K	CHIP C 0.010UF K	
C751			CK73GB1E105K	CHIP C 1.0UF K	
C762			CK73GB1H103K	CHIP C 0.010UF K	
C763			CK73GB1H104K	CHIP C 0.10UF K	
C764			CK73GB1H103K	CHIP C 0.010UF K	
C765			CK73GB1H104K	CHIP C 0.10UF K	
C766,767			CK73GB1H103K	CHIP C 0.010UF K	
C768			CC73GCH1H040C	CHIP C 4.0PF C	
C769			CC73GCH1H471J	CHIP C 470PF J	
C770-772			CK73GB1H103K	CHIP C 0.010UF K	
C773			CK73GB1H104K	CHIP C 0.10UF K	
C774			CC73GCH1H010C	CHIP C 1.0PF C	
C775			CK73GB1H104K	CHIP C 0.10UF K	
C776			CK73GB1H103K	CHIP C 0.010UF K	
C780			CK73GB1H102K	CHIP C 1000PF K	
C781,782			CK73GB1E105K	CHIP C 1.0UF K	
C783			CK73GB1H103K	CHIP C 0.010UF K	
C784			CK73GB1H102K	CHIP C 1000PF K	
C785			CK73GB1H103K	CHIP C 0.010UF K	
C786			CK73GB1H102K	CHIP C 1000PF K	
C787			CC73GCH1H180J	CHIP C 18PF J	
C788			CK73GB1H103K	CHIP C 0.010UF K	
C789			CC73GCH1H390J	CHIP C 39PF J	
C790			CK73GB1H104K	CHIP C 0.10UF K	
C791			CK73GB1E105K	CHIP C 1.0UF K	
C792		✻	CE32CL1V4R7M	CHIP EL 4.7UF 35WV	
C793			CC73GCH1H820J	CHIP C 82PF J	
C794			CK73GB1H104K	CHIP C 0.10UF K	
C795			CK73GB1H103K	CHIP C 0.010UF K	
C796			CK73GB1H104K	CHIP C 0.10UF K	
C797			CK73GB1E105K	CHIP C 1.0UF K	
C798			CK73GB1H103K	CHIP C 0.010UF K	
C799		✻	CE32CL1V4R7M	CHIP EL 4.7UF 35WV	
C800			CC73GCH1H150J	CHIP C 15PF J	
C802,803			CK73GB1H104K	CHIP C 0.10UF K	
C804			CK73GB1H102K	CHIP C 1000PF K	
C805			CC73GCH1H101J	CHIP C 100PF J	
C806,807			CK73GB1H103K	CHIP C 0.010UF K	
C808			CC73GCH1H101J	CHIP C 100PF J	
C809			CK73GB1H103K	CHIP C 0.010UF K	
C810			CE32CL1C100M	CHIP EL 10UF 16WV	
C812			CK73GB1C474K	CHIP C 0.47UF K	
C813			CC73GCH1H101J	CHIP C 100PF J	
C814			CK73GB1H223K	CHIP C 0.022UF K	
C815			CK73GB1H473K	CHIP C 0.047UF K	
C816			CK73GB1E105K	CHIP C 1.0UF K	
C817			CK73GB1H103K	CHIP C 0.010UF K	
C818		✻	CE32CL1V4R7M	CHIP EL 4.7UF 35WV	
C819			CK73GB1H103K	CHIP C 0.010UF K	
C820			CC73GCH1H101J	CHIP C 100PF J	
C821		✻	CE32CL1V4R7M	CHIP EL 4.7UF 35WV	
C822			CK73GB1H103K	CHIP C 0.010UF K	
C823			CC73GCH1H101J	CHIP C 100PF J	
C824-826			CK73GB1H103K	CHIP C 0.010UF K	
C827			CC73GCH1H101J	CHIP C 100PF J	
C841			CK73GB1H333K	CHIP C 0.033UF K	
C842			CK73GB1H103K	CHIP C 0.010UF K	
C843			CK73GB1H333K	CHIP C 0.033UF K	
C844			CK73GB1H103K	CHIP C 0.010UF K	
C845			CC73GCH1H471J	CHIP C 470PF J	
C846,847			CK73GB1H104K	CHIP C 0.10UF K	
C861			CK73GB1H103K	CHIP C 0.010UF K	
C862-864			CK73GB1H104K	CHIP C 0.10UF K	
C865			CK73GB1H103K	CHIP C 0.010UF K	
C866			CK73GB1H102K	CHIP C 1000PF K	
C867			CK73GB1H103K	CHIP C 0.010UF K	
C901			CK73GB1H102K	CHIP C 1000PF K	
C902			CK73GB1H104K	CHIP C 0.10UF K	
C903			CE32CL1C220M	CHIP EL 22UF 16WV	
C904		✻	CD04BQ1C471M	ELECTRO 470UF 16WV	
C905			CK73GB1H104K	CHIP C 0.10UF K	
C906			CK73GB1H102K	CHIP C 1000PF K	
C908			CE32CL1C220M	CHIP EL 22UF 16WV	
C909,910			CK73GB1H104K	CHIP C 0.10UF K	
C911			CE32CL1C220M	CHIP EL 22UF 16WV	
C912			CK73GB1H102K	CHIP C 1000PF K	
C920			CK73GB1H102K	CHIP C 1000PF K	
C921			CE32CL1C220M	CHIP EL 22UF 16WV	
C922			CK73GB1H104K	CHIP C 0.10UF K	
C923,924			CK73GB1H102K	CHIP C 1000PF K	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C926			CE32CL1C220M	CHIP EL 22UF 16WV	
C927			CK73GB1H104K	CHIP C 0.10UF K	
C928			CK73GB1C224K	CHIP C 0.22UF K	
C929			CE32CL1C220M	CHIP EL 22UF 16WV	
C930			CK73GB1H104K	CHIP C 0.10UF K	
C931			CK73GB1H103K	CHIP C 0.010UF K	
TC101,102			C05-0379-05	CERAMIC TRIMMER CAPACITOR (30P)	E
TC105			C05-0378-05	CERAMIC TRIMMER CAPACITOR (20P)	
CN1			E40-6526-05	PIN ASSY	
CN2			E40-6656-05	PIN ASSY	
CN3			E40-6525-05	PIN ASSY	
CN4			E41-1684-05	PIN ASSY	
CN5		✻	E40-6726-05	FLAT CABLE CONNECTOR	
CN100			E04-0191-05	PIN SOCKET	
CN101-103			E40-5487-05	PIN ASSY	
CN200			E04-0191-05	PIN SOCKET	
CN201			E40-6852-05	PIN ASSY	
CN300			E04-0191-05	PIN SOCKET	
CN301-304			E40-6852-05	PIN ASSY	
CN400			E04-0191-05	PIN SOCKET	
CN500,501			E18-0254-05	SOCKET	
CN600			E40-6525-05	PIN ASSY	
CN650			E40-6533-05	PIN ASSY	
CN663			E40-6533-05	PIN ASSY	
CN667			E04-0191-05	PIN SOCKET	
CN674			E04-0191-05	PIN SOCKET	
CN700			E40-6525-05	PIN ASSY	
CN800			E04-0191-05	PIN SOCKET	
J1			E11-0414-15	3.5D PHONE JACK (3P)	
J2			E56-0408-15	DIN SOCKET	
J3			E06-0752-15	DIN SOCKET	
J4			E11-0455-05	3.5D PHONE JACK (3P)	
J5		✻	E11-0705-15	PHONE JACK (9P)	
J100		✻	E13-0166-25	PIN JACK	
J800		✻	E13-0166-25	PIN JACK	
F1		✻	F53-0388-05	FUSE (1.25A)	
F901		✻	F53-0316-15	FUSE (375MA)	
F911		✻	F53-0316-15	FUSE (375MA)	
F921		✻	F53-0316-15	FUSE (375MA)	
CF591			L72-0998-05	CERAMIC FILTER	
L11,12			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L13			L41-1095-33	SMALL FIXED INDUCTOR (1.0UH)	
L14-17			L40-1085-92	SMALL FIXED INDUCTOR (100NH)	
L18		✻	L33-1557-05	CHOKE COIL	
L19		✻	L33-1554-05	CHOKE COIL	
L21-26			L92-0639-05	CHIP FERRITE	
L101,102			L41-2215-32	SMALL FIXED INDUCTOR (220UH)	
L103		✻	L41-1585-32	SMALL FIXED INDUCTOR (0.15UH)	
L104			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L105			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
L106			L40-6891-14	SMALL FIXED INDUCTOR (6.8UH)	E
L107		✻	L33-1547-05	SMALL FIXED INDUCTOR (1000UH)	
L108			L40-6891-14	SMALL FIXED INDUCTOR (6.8UH)	E
L109			L40-5691-14	SMALL FIXED INDUCTOR (5.6UH)	
L110		✻	L33-1547-05	SMALL FIXED INDUCTOR (1000UH)	
L131,132			L40-6891-14	SMALL FIXED INDUCTOR (6.8UH)	
L133			L34-4831-05	COIL	
L134			L34-4832-05	COIL	
L135			L34-4833-05	COIL	
L136			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
L137			L40-1892-14	SMALL FIXED INDUCTOR (1.8UH)	
L138			L40-1292-14	SMALL FIXED INDUCTOR (1.2UH)	
L139			L40-1092-14	SMALL FIXED INDUCTOR (1.0UH)	
L140			L40-3382-14	SMALL FIXED INDUCTOR (330NH)	
L141-144			L40-2282-14	SMALL FIXED INDUCTOR (220NH)	
L145			L40-1501-14	SMALL FIXED INDUCTOR (15UH)	
L146			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
L147			L40-6891-14	SMALL FIXED INDUCTOR (6.8UH)	
L148			L40-5691-14	SMALL FIXED INDUCTOR (5.6UH)	
L149			L40-3391-14	SMALL FIXED INDUCTOR (3.3UH)	
L150			L34-4831-05	COIL	
L151			L40-2792-14	SMALL FIXED INDUCTOR (2.7UH)	
L152			L40-2292-14	SMALL FIXED INDUCTOR (2.2UH)	
L153			L34-4832-05	COIL	
L154		✻	L41-1098-60	SMALL FIXED INDUCTOR (1UH)	
L155			L40-1292-14	SMALL FIXED INDUCTOR (1.2UH)	
L156			L40-2282-14	SMALL FIXED INDUCTOR (220NH)	
L157			L40-1592-14	SMALL FIXED INDUCTOR (1.5UH)	
L158			L40-1501-14	SMALL FIXED INDUCTOR (15UH)	
L159			L40-1892-14	SMALL FIXED INDUCTOR (1.8UH)	
L160			L40-1292-14	SMALL FIXED INDUCTOR (1.2UH)	
L161			L40-1092-14	SMALL FIXED INDUCTOR (1.0UH)	
L162			L40-3382-14	SMALL FIXED INDUCTOR (330NH)	
L163-166			L40-2282-14	SMALL FIXED INDUCTOR (220NH)	
L167			L34-4831-05	COIL	
L168			L34-4832-05	COIL	
L170			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
L171,172			L34-4608-15	AIR-CORE COIL	
L231			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
L232			L40-2282-14	SMALL FIXED INDUCTOR (220NH)	
L233			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
L234		✻	L39-1556-05	TOROIDAL COIL	
L235			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L236			L41-1585-33	SMALL FIXED INDUCTOR (0.15UH)	
L237			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
L251,252		✻	L41-2288-60	SMALL FIXED INDUCTOR (220NH)	
L253		✻	L34-4935-05	COIL	
L254		✻	L41-2288-60	SMALL FIXED INDUCTOR (220NH)	
L255		✻	L34-4935-05	COIL	
L261		✻	L39-1554-05	TOROIDAL COIL	
L262		✻	L39-1480-15	TOROIDAL COIL	
L263			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L264		✻	L39-1555-05	TOROIDAL COIL	
L281			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L283			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L284			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L301,302		✻	L34-4937-05	COIL	
L321		✻	L41-1288-60	SMALL FIXED INDUCTOR (120NH)	
L322		✻	L41-1088-60	SMALL FIXED INDUCTOR (100NH)	
L323		✻	L39-1493-15	TOROIDAL COIL	
L324		✻	L39-1480-15	TOROIDAL COIL	
L325			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L326			L34-4709-05	COIL	
L327			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L351			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L353			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L354			L41-4785-33	SMALL FIXED INDUCTOR (0.47UH)	
L355			L41-1095-33	SMALL FIXED INDUCTOR (1.0UH)	
L356			L40-1088-67	SMALL FIXED INDUCTOR (100NH)	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
L374-376			L34-4818-05	COIL	
L391			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L393			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L394		✻	L39-1553-05	TOROIDAL COIL	
L397			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L421,422			L39-1255-15	TOROIDAL COIL	
L431			L41-4785-33	SMALL FIXED INDUCTOR (0.47UH)	
L432			L40-1288-67	SMALL FIXED INDUCTOR (120NH)	
L451-453			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L454		✻	L41-1098-60	SMALL FIXED INDUCTOR (1UH)	
L455			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L456		✻	L41-1098-60	SMALL FIXED INDUCTOR (1UH)	
L461		✻	L39-1480-15	TOROIDAL COIL	
L462		✻	L39-1571-05	TOROIDAL COIL	
L471-473			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L474,475			L41-6895-33	SMALL FIXED INDUCTOR (6.8UH)	
L476			L41-5695-33	SMALL FIXED INDUCTOR (5.6UH)	
L477,478			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L479			L41-6895-33	SMALL FIXED INDUCTOR (6.8UH)	
L480			L41-5695-33	SMALL FIXED INDUCTOR (5.6UH)	
L481			L41-6895-33	SMALL FIXED INDUCTOR (6.8UH)	
L482-484			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L485		✻	L41-2298-60	SMALL FIXED INDUCTOR (2.2UH)	
L486			L41-2295-33	SMALL FIXED INDUCTOR (2.2UH)	
L521			L41-8285-33	SMALL FIXED INDUCTOR (0.82UH)	
L522,523			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L524		✻	L39-1558-05	TOROIDAL COIL	
L525			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L526,527			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L528			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L541			L41-6885-33	SMALL FIXED INDUCTOR (0.68UH)	
L542			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L551			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L552			L39-1255-15	TOROIDAL COIL	
L571,572			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L573			L41-3385-33	SMALL FIXED INDUCTOR (0.33UH)	
L591			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L592			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	
L593			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L594			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L595			L34-4787-05	COIL	
L641			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	
L651			L41-4795-33	SMALL FIXED INDUCTOR (4.7UH)	
L652			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L653		✻	L34-4935-05	COIL	
L654			L41-2285-33	SMALL FIXED INDUCTOR (0.22UH)	
L660		✻	L33-1549-05	CHOKE COIL	
L661,662			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
L663			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L664,665		✻	L34-4935-05	COIL	
L701			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L702			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L703			L40-1001-86	SMALL FIXED INDUCTOR (10UH)	
L705			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L721,722			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L723			L41-3395-33	SMALL FIXED INDUCTOR (3.3UH)	
L724			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L725,726			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L727			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L728			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L741			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	
L742			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L743			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L761			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L762			L39-1476-05	TOROIDAL COIL	
L763		✻	L39-1480-15	TOROIDAL COIL	
L764			L41-4785-33	SMALL FIXED INDUCTOR (0.47UH)	
L765			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
L781			L41-2785-33	SMALL FIXED INDUCTOR (0.27UH)	
L782			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	
L783,784			L41-4705-33	SMALL FIXED INDUCTOR (47UH)	
L785			L33-0695-05	SMALL FIXED INDUCTOR (1000UH)	
L786			L41-1085-33	SMALL FIXED INDUCTOR (0.1UH)	
L841			L41-1015-33	SMALL FIXED INDUCTOR (100UH)	
L903			L41-1005-33	SMALL FIXED INDUCTOR (10UH)	
XF301		✻	L71-0656-15	MCF (11.374MHZ)	
XF371			L71-0605-05	MCF (73.095MHZ)	
XF471		✻	L71-0664-05	MCF (10.695MHZ)	
XF472		✻	L71-0230-15	MCF (10.695MHZ)	
XF473			L71-0569-15	CRYSTAL FILTER (10.695MHZ)	
XF474		✻	L71-0657-05	CRYSTAL FILTER (11.374MHZ)	
XF475		✻	L71-0658-05	CRYSTAL FILTER (11.374MHZ)	
R11			RK73GB2A103J	CHIP R 10K J 1/10W	
R12-17			RK73GB2A101J	CHIP R 100 J 1/10W	
R21			RK73GB2A104J	CHIP R 100K J 1/10W	
R22			RK73GB2A123J	CHIP R 12K J 1/10W	
R23			RK73GB2A101J	CHIP R 100 J 1/10W	
R24			RK73GB2A471J	CHIP R 470 J 1/10W	
R25			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R26			RK73GB2A562J	CHIP R 5.6K J 1/10W	
R27			RK73GB2A474J	CHIP R 470K J 1/10W	
R28			RK73GB2A2R2J	CHIP R 2.2 J 1/10W	
R29-32			RK73GB2A103J	CHIP R 10K J 1/10W	
R33			RK73GB2A223J	CHIP R 22K J 1/10W	
R34			RK73GB2A221J	CHIP R 220 J 1/10W	
R35			RK73GB2A153J	CHIP R 15K J 1/10W	
R36			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R37			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R38			RK73GB2A103J	CHIP R 10K J 1/10W	
R39,40			RK73GB2A101J	CHIP R 100 J 1/10W	
R41			RK73GB2A223J	CHIP R 22K J 1/10W	
R42			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R51			RK73GB2A101J	CHIP R 100 J 1/10W	
R52			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R101			RK73FB2B473J	CHIP R 47K J 1/8W	
R102			RK73EB2E560J	CHIP R 56 J 1/4W	
R103			RK73EB2E471J	CHIP R 470 J 1/4W	
R104			RK73EB2E181J	CHIP R 180 J 1/4W	
R105			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R106			RK73GB2A101J	CHIP R 100 J 1/10W	
R107,108			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R109			RK73FB2B680J	CHIP R 68 J 1/8W	
R110			RK73GB2A560J	CHIP R 56 J 1/10W	
R131-143			RK73GB2A103J	CHIP R 10K J 1/10W	
R144			RK73EB2E680J	CHIP R 68 J 1/4W	
R145			RK73GB2A471J	CHIP R 470 J 1/10W	
R146			RK73FB2B330J	CHIP R 33 J 1/8W	
R147-155			RK73GB2A330J	CHIP R 33 J 1/10W	
R156,157			RK73EB2E680J	CHIP R 68 J 1/4W	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R158			RK73EB2E560J	CHIP R 56 J 1/4W	
R159-167			RK73EB2E680J	CHIP R 68 J 1/4W	
R168			RK73GB2A330J	CHIP R 33 J 1/10W	
R169			RK73EB2E680J	CHIP R 68 J 1/4W	
R170-182			RK73FB2B330J	CHIP R 33 J 1/8W	
R212-215			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R217-220			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R231			RK73FB2B221J	CHIP R 220 J 1/8W	
R232			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R235			RK73GB2A122J	CHIP R 1.2K J 1/10W	
R236			RK73GB2A471J	CHIP R 470 J 1/10W	
R237			RK73GB2A821J	CHIP R 820 J 1/10W	
R238			RK73GB2A120J	CHIP R 12 J 1/10W	
R239			RK73FB2B390J	CHIP R 39 J 1/8W	
R240			RK73GB2A151J	CHIP R 150 J 1/10W	
R241,242			RK73EB2E121J	CHIP R 120 J 1/4W	
R243			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R244			RK73GB2A562J	CHIP R 5.6K J 1/10W	
R245			RK73GB2A181J	CHIP R 180 J 1/10W	
R246			RK73GB2A470J	CHIP R 47 J 1/10W	
R247			RK73GB2A271J	CHIP R 270 J 1/10W	
R248			RK73FB2B221J	CHIP R 220 J 1/8W	
R249			RK73GB2A271J	CHIP R 270 J 1/10W	
R261			RK73FB2B471J	CHIP R 470 J 1/8W	
R263,264			RK73EB2E331J	CHIP R 330 J 1/4W	
R265,266			RK73GB2A100J	CHIP R 10 J 1/10W	
R267			RK73GB2A271J	CHIP R 270 J 1/10W	
R268			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R269-271			RK73GB2A100J	CHIP R 10 J 1/10W	
R272			RK73GB2A821J	CHIP R 820 J 1/10W	
R273			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R274			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R281			RK73GB2A471J	CHIP R 470 J 1/10W	
R282			RK73GB2A561J	CHIP R 560 J 1/10W	
R283			RK73GB2A151J	CHIP R 150 J 1/10W	
R284			RK73GB2A681J	CHIP R 680 J 1/10W	
R285,286			RK73GB2A8R2J	CHIP R 8.2 J 1/10W	
R287			RK73FB2B100J	CHIP R 10 J 1/8W	
R289			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R321			RK73FB2B471J	CHIP R 470 J 1/8W	
R323,324			RK73GB2A681J	CHIP R 680 J 1/10W	
R325,326			RK73GB2A100J	CHIP R 10 J 1/10W	
R327			RK73GB2A271J	CHIP R 270 J 1/10W	
R329-331			RK73GB2A100J	CHIP R 10 J 1/10W	
R336			RK73GB2A331J	CHIP R 330 J 1/10W	
R337			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R352			RK73EB2E471J	CHIP R 470 J 1/4W	
R355			RK73GB2A471J	CHIP R 470 J 1/10W	
R356,357			RK73GB2A151J	CHIP R 150 J 1/10W	
R358,359			RK73GB2A8R2J	CHIP R 8.2 J 1/10W	
R360			RK73EB2E100J	CHIP R 10 J 1/4W	
R361			RK73GB2A560J	CHIP R 56 J 1/10W	
R362,363			RK73GB2A121J	CHIP R 120 J 1/10W	
R371,372			RK73GB2A331J	CHIP R 330 J 1/10W	
R392			RK73GB2A471J	CHIP R 470 J 1/10W	
R393			RK73FB2B220J	CHIP R 22 J 1/8W	
R394			RK73GB2A101J	CHIP R 100 J 1/10W	
R395			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R396			RK73GB2A681J	CHIP R 680 J 1/10W	
R398			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R408			RK73GB2A471J	CHIP R 470 J 1/10W	
R421			RK73GB2A331J	CHIP R 330 J 1/10W	
R422			RK73GB2A271J	CHIP R 270 J 1/10W	
R423			RK73GB2A330J	CHIP R 33 J 1/10W	
R424			RK73GB2A221J	CHIP R 220 J 1/10W	
R431			RK73GB2A330J	CHIP R 33 J 1/10W	
R432			RK73GB2A124J	CHIP R 120K J 1/10W	
R433			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R434			RK73GB2A100J	CHIP R 10 J 1/10W	
R436,437			RK73GB2A220J	CHIP R 22 J 1/10W	
R438			RK73GB2A331J	CHIP R 330 J 1/10W	
R439			RK73GB2A180J	CHIP R 18 J 1/10W	
R440			RK73GB2A331J	CHIP R 330 J 1/10W	
R451			RK73EB2E471J	CHIP R 470 J 1/4W	
R452			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R453			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R454			RK73GB2A821J	CHIP R 820 J 1/10W	
R455			RK73GB2A220J	CHIP R 22 J 1/10W	
R457			RK73GB2A8R2J	CHIP R 8.2 J 1/10W	
R458			RK73GB2A103J	CHIP R 10K J 1/10W	
R460			RK73GB2A101J	CHIP R 100 J 1/10W	
R461,462			RK73GB2A120J	CHIP R 12 J 1/10W	
R463			RK73GB2A331J	CHIP R 330 J 1/10W	
R464,465			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R466			RK73GB2A221J	CHIP R 220 J 1/10W	
R467			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R468			RK73GB2A221J	CHIP R 220 J 1/10W	
R471			RK73GB2A391J	CHIP R 390 J 1/10W	
R472,473			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R474			RK73GB2A561J	CHIP R 560 J 1/10W	
R477,478			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R479			RK73GB2A220J	CHIP R 22 J 1/10W	
R480			RK73GB2A681J	CHIP R 680 J 1/10W	
R481-485			RK73GB2A101J	CHIP R 100 J 1/10W	
R486			RK73GB2A681J	CHIP R 680 J 1/10W	
R487			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R488			RK73GB2A220J	CHIP R 22 J 1/10W	
R489			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R491			RK73GB2A391J	CHIP R 390 J 1/10W	
R492,493			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R494			RK73GB2A561J	CHIP R 560 J 1/10W	
R496-500			RK73GB2A101J	CHIP R 100 J 1/10W	
R501,502			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R503,504			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R505-509			RK73GB2A103J	CHIP R 10K J 1/10W	
R520			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R521			RK73FB2B331J	CHIP R 330 J 1/8W	
R522			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R523			RK73FB2B471J	CHIP R 470 J 1/8W	
R524			RK73GB2A820J	CHIP R 82 J 1/10W	
R525			RK73GB2A101J	CHIP R 100 J 1/10W	
R526			RK73GB2A333J	CHIP R 33K J 1/10W	
R527,528			RK73GB2A103J	CHIP R 10K J 1/10W	
R529			RK73GB2A220J	CHIP R 22 J 1/10W	
R530			RK73GB2A561J	CHIP R 560 J 1/10W	
R531			RK73GB2A151J	CHIP R 150 J 1/10W	
R532			RK73GB2A122J	CHIP R 1.2K J 1/10W	
R533,534			RK73GB2A4R7J	CHIP R 4.7 J 1/10W	
R535			RK73GB2A100J	CHIP R 10 J 1/10W	
R536			RK73GB2A220J	CHIP R 22 J 1/10W	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R537			RK73GB2A101J	CHIP R 100 J 1/10W	
R538			RK73GB2A331J	CHIP R 330 J 1/10W	
R539			RK73GB2A151J	CHIP R 150 J 1/10W	
R540			RK73GB2A471J	CHIP R 470 J 1/10W	
R542			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R543			RK73GB2A471J	CHIP R 470 J 1/10W	
R544			RK73GB2A103J	CHIP R 10K J 1/10W	
R545			RK73GB2A100J	CHIP R 10 J 1/10W	
R546,547			RK73GB2A120J	CHIP R 12 J 1/10W	
R548			RK73GB2A271J	CHIP R 270 J 1/10W	
R549			RK73GB2A180J	CHIP R 18 J 1/10W	
R550			RK73GB2A271J	CHIP R 270 J 1/10W	
R551			RK73GB2A471J	CHIP R 470 J 1/10W	
R552,553			RK73GB2A221J	CHIP R 220 J 1/10W	
R554			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R555			RK73GB2A224J	CHIP R 220K J 1/10W	
R556			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R557			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R560			RK73GB2A330J	CHIP R 33 J 1/10W	
R571			RK73GB2A471J	CHIP R 470 J 1/10W	
R572			RK73GB2A271J	CHIP R 270 J 1/10W	
R573			RK73GB2A180J	CHIP R 18 J 1/10W	
R574			RK73GB2A271J	CHIP R 270 J 1/10W	
R575			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R576			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R577			RK73GB2A391J	CHIP R 390 J 1/10W	
R578			RK73EB2E221J	CHIP R 220 J 1/4W	
R579			RK73GB2A101J	CHIP R 100 J 1/10W	
R581			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R586			RK73GB2A153J	CHIP R 15K J 1/10W	
R592			RK73GB2A473J	CHIP R 47K J 1/10W	
R593			RK73GB2A471J	CHIP R 470 J 1/10W	
R595			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R601			RK73GB2A681J	CHIP R 680 J 1/10W	
R603,604			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R609			RK73GB2A334J	CHIP R 330K J 1/10W	
R610			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R611			RK73GB2A223J	CHIP R 22K J 1/10W	
R612			RK73GB2A122J	CHIP R 1.2K J 1/10W	
R614			RK73GB2A333J	CHIP R 33K J 1/10W	
R615			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R616			RK73GB2A104J	CHIP R 100K J 1/10W	
R617			RK73GB2A684J	CHIP R 680K J 1/10W	
R618			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R620			RK73GB2A223J	CHIP R 22K J 1/10W	
R621			RK73GB2A473J	CHIP R 47K J 1/10W	
R622			RK73GB2A223J	CHIP R 22K J 1/10W	
R623			RK73GB2A183J	CHIP R 18K J 1/10W	
R624			RK73GB2A273J	CHIP R 27K J 1/10W	
R625			RK73GB2A223J	CHIP R 22K J 1/10W	
R626			RK73GB2A103J	CHIP R 10K J 1/10W	
R628			RK73GB2A683J	CHIP R 68K J 1/10W	
R629			RK73GB2A684J	CHIP R 680K J 1/10W	
R632			RK73GB2A103J	CHIP R 10K J 1/10W	
R633-636			RK73GB2A473J	CHIP R 47K J 1/10W	
R640			RK73GB2A154J	CHIP R 150K J 1/10W	
R641			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R642			RK73GB2A101J	CHIP R 100 J 1/10W	
R643			RK73GB2A471J	CHIP R 470 J 1/10W	
R644			RK73GB2A101J	CHIP R 100 J 1/10W	
R646			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R648			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R650			RK73GB2A221J	CHIP R 220 J 1/10W	
R651			RK73GB2A104J	CHIP R 100K J 1/10W	
R652			RK73GB2A221J	CHIP R 220 J 1/10W	
R653,654			RK73GB2A101J	CHIP R 100 J 1/10W	
R655			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R656			RK73GB2A473J	CHIP R 47K J 1/10W	
R657			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R658			RK73GB2A101J	CHIP R 100 J 1/10W	
R659			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R660			RK73GB2A272J	CHIP R 2.7K J 1/10W	
R661			RK73GB2A473J	CHIP R 47K J 1/10W	
R662,663			RK73GB2A223J	CHIP R 22K J 1/10W	
R664			RK73GB2A471J	CHIP R 470 J 1/10W	
R665			RK73GB2A221J	CHIP R 220 J 1/10W	
R666			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R667			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R668			RK73GB2A101J	CHIP R 100 J 1/10W	
R669			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R670			RK73GB2A473J	CHIP R 47K J 1/10W	
R671			RK73GB2A223J	CHIP R 22K J 1/10W	
R672			RK73GB2A473J	CHIP R 47K J 1/10W	
R673			RK73GB2A683J	CHIP R 68K J 1/10W	
R674			RK73GB2A103J	CHIP R 10K J 1/10W	
R675			RK73GB2A223J	CHIP R 22K J 1/10W	
R676			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R677			RK73GB2A473J	CHIP R 47K J 1/10W	
R678			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R679			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R680			RK73GB2A153J	CHIP R 15K J 1/10W	
R681			RK73GB2A103J	CHIP R 10K J 1/10W	
R682			RK73GB2A221J	CHIP R 220 J 1/10W	
R683			RK73GB2A333J	CHIP R 33K J 1/10W	
R684			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R685			RK73GB2A563J	CHIP R 56K J 1/10W	
R686			RK73GB2A101J	CHIP R 100 J 1/10W	
R687			RK73GB2A681J	CHIP R 680 J 1/10W	
R689,690			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R691			RK73GB2A473J	CHIP R 47K J 1/10W	
R692			RK73GB2A220J	CHIP R 22 J 1/10W	
R693-695			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R701			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R702			RK73GB2A331J	CHIP R 330 J 1/10W	
R703			RK73GB2A562J	CHIP R 5.6K J 1/10W	
R705,706			RK73GB2A471J	CHIP R 470 J 1/10W	
R707			RK73GB2A681J	CHIP R 680 J 1/10W	
R708			RK73GB2A101J	CHIP R 100 J 1/10W	
R709			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R710			RK73GB2A224J	CHIP R 220K J 1/10W	
R711			RK73GB2A331J	CHIP R 330 J 1/10W	
R712			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R713			RK73GB2A820J	CHIP R 82 J 1/10W	
R714			RK73GB2A471J	CHIP R 470 J 1/10W	
R715			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R716			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R721			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R722			RK73GB2A103J	CHIP R 10K J 1/10W	
R723			RK73GB2A822J	CHIP R 8.2K J 1/10W	
R724			RK73GB2A562J	CHIP R 5.6K J 1/10W	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti- nation
R725,726			RK73GB2A471J	CHIP R 470 J 1/10W	
R727			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R728			RK73GB2A331J	CHIP R 330 J 1/10W	
R729			RK73GB2A470J	CHIP R 47 J 1/10W	
R730			RK73GB2A101J	CHIP R 100 J 1/10W	
R731			RK73GB2A330J	CHIP R 33 J 1/10W	
R732			RK73GB2A104J	CHIP R 100K J 1/10W	
R733			RK73GB2A393J	CHIP R 39K J 1/10W	
R734			RK73GB2A223J	CHIP R 22K J 1/10W	
R735			RK73GB2A471J	CHIP R 470 J 1/10W	
R736			RK73GB2A224J	CHIP R 220K J 1/10W	
R737			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R738			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R741			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R742			RK73GB2A331J	CHIP R 330 J 1/10W	
R744			RK73GB2A470J	CHIP R 47 J 1/10W	
R745			RK73GB2A100J	CHIP R 10 J 1/10W	
R746			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R747			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R748			RK73GB2A471J	CHIP R 470 J 1/10W	
R749			RK73GB2A103J	CHIP R 10K J 1/10W	
R750			RK73GB2A470J	CHIP R 47 J 1/10W	
R751			RK73GB2A331J	CHIP R 330 J 1/10W	
R752			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R753			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R762			RK73GB2A101J	CHIP R 100 J 1/10W	
R763			RK73GB2A470J	CHIP R 47 J 1/10W	
R764			RK73EB2E820J	CHIP R 82 J 1/4W	
R765			RK73GB2A681J	CHIP R 680 J 1/10W	
R766			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R767			RK73GB2A471J	CHIP R 470 J 1/10W	
R768			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R769			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R770			RK73GB2A331J	CHIP R 330 J 1/10W	
R771			RK73GB2A680J	CHIP R 68 J 1/10W	
R772			RK73GB2A471J	CHIP R 470 J 1/10W	
R780			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R781			RK73GB2A103J	CHIP R 10K J 1/10W	
R782			RK73FB2B821J	CHIP R 820 J 1/8W	
R783,784			RK73GB2A103J	CHIP R 10K J 1/10W	
R785			RK73FB2B821J	CHIP R 820 J 1/8W	
R786			RK73GB2A6R8J	CHIP R 6.8 J 1/10W	
R787			RK73GB2A821J	CHIP R 820 J 1/10W	
R788,789			RK73GB2A100J	CHIP R 10 J 1/10W	
R790			RK73GB2A471J	CHIP R 470 J 1/10W	
R791			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R792			RK73GB2A471J	CHIP R 470 J 1/10W	
R793			RK73GB2A151J	CHIP R 150 J 1/10W	
R794			RK73GB2A471J	CHIP R 470 J 1/10W	
R795			RK73GB2A124J	CHIP R 120K J 1/10W	
R796			RK73GB2A184J	CHIP R 180K J 1/10W	
R797			RK73GB2A563J	CHIP R 56K J 1/10W	
R798			RK73GB2A154J	CHIP R 150K J 1/10W	
R800			RK73FB2B473J	CHIP R 47K J 1/8W	
R801			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R802			RK73GB2A473J	CHIP R 47K J 1/10W	
R803			RK73GB2A683J	CHIP R 68K J 1/10W	
R804			RK73GB2A334J	CHIP R 330K J 1/10W	
R805			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R806			RK73GB2A273J	CHIP R 27K J 1/10W	
R807			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R808			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R809			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R810			RK73GB2A273J	CHIP R 27K J 1/10W	
R811,812			RK73GB2A104J	CHIP R 100K J 1/10W	
R813			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R814,815			RK73GB2A104J	CHIP R 100K J 1/10W	
R816			RK73GB2A471J	CHIP R 470 J 1/10W	
R817			RK73GB2A101J	CHIP R 100 J 1/10W	
R818			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R819			RK73GB2A822J	CHIP R 8.2K J 1/10W	
R820			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R821			RK73GB2A103J	CHIP R 10K J 1/10W	
R822			RK73GB2A471J	CHIP R 470 J 1/10W	
R823			RK73GB2A153J	CHIP R 15K J 1/10W	
R824			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R825			RK73GB2A104J	CHIP R 100K J 1/10W	
R826			RK73GB2A103J	CHIP R 10K J 1/10W	
R827			RK73GB2A100J	CHIP R 10 J 1/10W	
R828			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R829			RK73GB2A334J	CHIP R 330K J 1/10W	
R830			RK73GB2A333J	CHIP R 33K J 1/10W	
R831			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R832			RK73GB2A331J	CHIP R 330 J 1/10W	
R833			RK73GB2A104J	CHIP R 100K J 1/10W	
R834			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R835			RK73GB2A104J	CHIP R 100K J 1/10W	
R836			RK73GB2A153J	CHIP R 15K J 1/10W	
R837			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R838			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R839			RK73GB2A101J	CHIP R 100 J 1/10W	
R840			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R841			RK73GB2A100J	CHIP R 10 J 1/10W	
R842			RK73GB2A822J	CHIP R 8.2K J 1/10W	
R843			RK73GB2A100J	CHIP R 10 J 1/10W	
R844			RK73GB2A334J	CHIP R 330K J 1/10W	
R845			RK73GB2A103J	CHIP R 10K J 1/10W	
R846			RK73GB2A223J	CHIP R 22K J 1/10W	
R847			RK73GB2A104J	CHIP R 100K J 1/10W	
R848			RK73GB2A123J	CHIP R 12K J 1/10W	
R849			RK73GB2A474J	CHIP R 470K J 1/10W	
R850			RK73GB2A333J	CHIP R 33K J 1/10W	
R851,852			RK73GB2A334J	CHIP R 330K J 1/10W	
R853			RK73GB2A223J	CHIP R 22K J 1/10W	
R854-856			RK73GB2A473J	CHIP R 47K J 1/10W	
R857			RK73GB2A330J	CHIP R 33 J 1/10W	
R858			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R859			RK73GB2A103J	CHIP R 10K J 1/10W	
R860			RK73GB2A154J	CHIP R 150K J 1/10W	
R862			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R863			RK73GB2A474J	CHIP R 470K J 1/10W	
R864			RK73GB2A183J	CHIP R 18K J 1/10W	
R865			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R866			RK73GB2A223J	CHIP R 22K J 1/10W	
R867			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R868			RK73GB2A473J	CHIP R 47K J 1/10W	
R869			RK73GB2A103J	CHIP R 10K J 1/10W	
R870			RK73GB2A104J	CHIP R 100K J 1/10W	
R871			RK73GB2A224J	CHIP R 220K J 1/10W	
R872			RK73GB2A104J	CHIP R 100K J 1/10W	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R873			RK73GB2A273J	CHIP R 27K J 1/10W	
R874			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R875			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R876			RK73GB2A394J	CHIP R 390K J 1/10W	
R877			RK73GB2A333J	CHIP R 33K J 1/10W	
R878			RK73GB2A184J	CHIP R 180K J 1/10W	
R879			RK73GB2A224J	CHIP R 220K J 1/10W	
R880			RK73GB2A101J	CHIP R 100 J 1/10W	
R881			RK73GB2A104J	CHIP R 100K J 1/10W	
R882			RK73GB2A274J	CHIP R 270K J 1/10W	
R883			RK73GB2A000J	CHIP R 0.0 J 1/10W	
R884			RK73GB2A221J	CHIP R 220 J 1/10W	
R901,902			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R903			RK73GB2A103J	CHIP R 10K J 1/10W	
R905,906			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R907-909			RK73GB2A473J	CHIP R 47K J 1/10W	
R910,911			RK73GB2A103J	CHIP R 10K J 1/10W	
R916			RK73GB2A103J	CHIP R 10K J 1/10W	
R917			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R918,919			RK73GB2A473J	CHIP R 47K J 1/10W	
R920			RK73GB2A103J	CHIP R 10K J 1/10W	
R921			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R922			RK73GB2A471J	CHIP R 470 J 1/10W	
R923			RK73GB2A103J	CHIP R 10K J 1/10W	
R924			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R925			RK73GB2A473J	CHIP R 47K J 1/10W	
R927			RK73GB2A473J	CHIP R 47K J 1/10W	
R936			RK73GB2A103J	CHIP R 10K J 1/10W	
R937,938			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R939			RK73GB2A473J	CHIP R 47K J 1/10W	
VR261			R32-0346-05	SEMI FIXED VARIABLE RESISTOR	
VR321			R32-0346-05	SEMI FIXED VARIABLE RESISTOR	
K11			S51-1420-05	RELAY	
K101,102			S76-0459-05	RELAY	
D11,12			1SS226-F	DIODE	
D13			MA2S111-F	DIODE	
D14			EDZ18B	ZENER DIODE	
D15		*	EDZ4.3B	ZENER DIODE	
D17			MA2S111-F	DIODE	
D18		*	MC2858-T111	DIODE	
D20-23			MA2S111-F	DIODE	
D24			DA221	DIODE	
D101			DSP-301N	SURGE ABSORBER	
D102,103		*	MC2858-T111	DIODE	
D104			V08(G)	DIODE	
D105,106			RLS245	DIODE	
D107			V08(G)	DIODE	
D108-110			HVC131	DIODE	
D131-156			HVC131	DIODE	
D231-234			HVC131	DIODE	
D235		*	MC2858-T111	DIODE	
D261			HVC131	DIODE	
D281			HVC131	DIODE	
D321			HVC131	DIODE	
D323			1SV312-F	DIODE	
D351			HVC131	DIODE	
D371			1SV312-F	DIODE	
D421			1SV312-F	DIODE	
D422,423			HSM88ASR-E	DIODE	

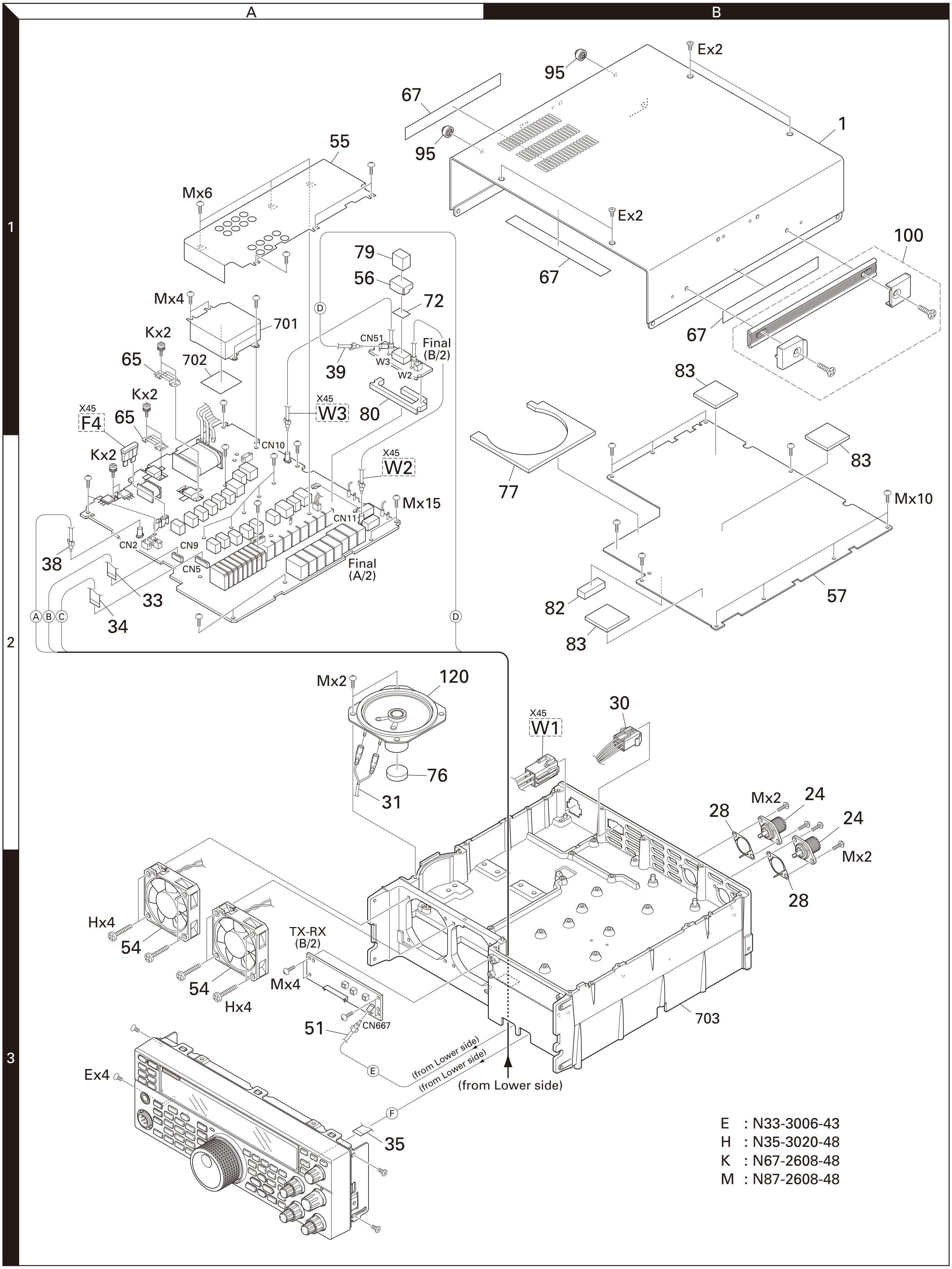
Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
D431			MC2848-T111	DIODE	
D441			HVC131	DIODE	
D443			HVC131	DIODE	
D461-464			HVC131	DIODE	
D471,472			1SV312-F	DIODE	
D473			HVC131	DIODE	
D474-477			1SV312-F	DIODE	
D478			HVC131	DIODE	
D522-525			L204BBB	DIODE	
D526		*	MC2858-T111	DIODE	
D551,552			HSM88ASR-E	DIODE	
D571		*	MC2858-T111	DIODE	
D586,587			1SS226-F	DIODE	
D660			UDZW6.2(B)	ZENER DIODE	
D661			1SS226-F	DIODE	
D662			RB706F-40	DIODE	
D663			1SV312-F	DIODE	
D701		*	MC2858-T111	DIODE	
D702			MA2S111-F	DIODE	
D721,722			RN731V	DIODE	
D723			HVC131	DIODE	
D741			RN731V	DIODE	
D761,762			HVC131	DIODE	
D781			1SV312-F	DIODE	
D782,783			HVC131	DIODE	
D799,800			EDZ18B	ZENER DIODE	
D801			EDZ5.1B	ZENER DIODE	
D802			MA2S111-F	DIODE	
D803			1SS388F	DIODE	
D806			UDZW10(B)	ZENER DIODE	
D807-809			MA2S111-F	DIODE	
D811		*	DZ2J033M	ZENER DIODE	
D812,813			MA2S111-F	DIODE	
D841-843			MA2S111-F	DIODE	
D861,862			1SS388F	DIODE	
IC11,12			TC74HC4094AFF	MOS-IC	
IC13			M62353AGPDF5J	MOS-IC	
IC14,15			TC74HC4094AFF	MOS-IC	
IC521			NJM12904V	MOS-IC	
IC591			NJM2591V	BI-POLAR IC	
IC592			NJM2732V	BI-POLAR IC	
IC631			TC4W53FU-F	MOS-IC	
IC701			TA4107F-F	MOS-IC	
IC761			TA4107F-F	MOS-IC	
IC801			NJM12904V	MOS-IC	
IC802			TC4W53FU-F	MOS-IC	
IC803			NJM12904V	MOS-IC	
IC861			NJM12904V	MOS-IC	
Q12			2SC5383-T111	TRANSISTOR	
Q13			RT1N436U-T111	TRANSISTOR	
Q14			2SK1824-A	FET	
Q15			RT1N141U-T111	TRANSISTOR	
Q16			RT1N436U-T111	TRANSISTOR	
Q17			2SB1188(Q,R)	TRANSISTOR	
Q101,102		*	RT5N234C-T112	TRANSISTOR	
Q103		*	2SC6046-T112	TRANSISTOR	
Q131-143			RT1N436U-T111	TRANSISTOR	
Q236		*	2SC5551AF	TRANSISTOR	
Q239			RT1N436U-T111	TRANSISTOR	
Q263-266		*	2SK1740-4	FET	

PARTS LIST

TX-RX UNIT (X57-785X-XX)

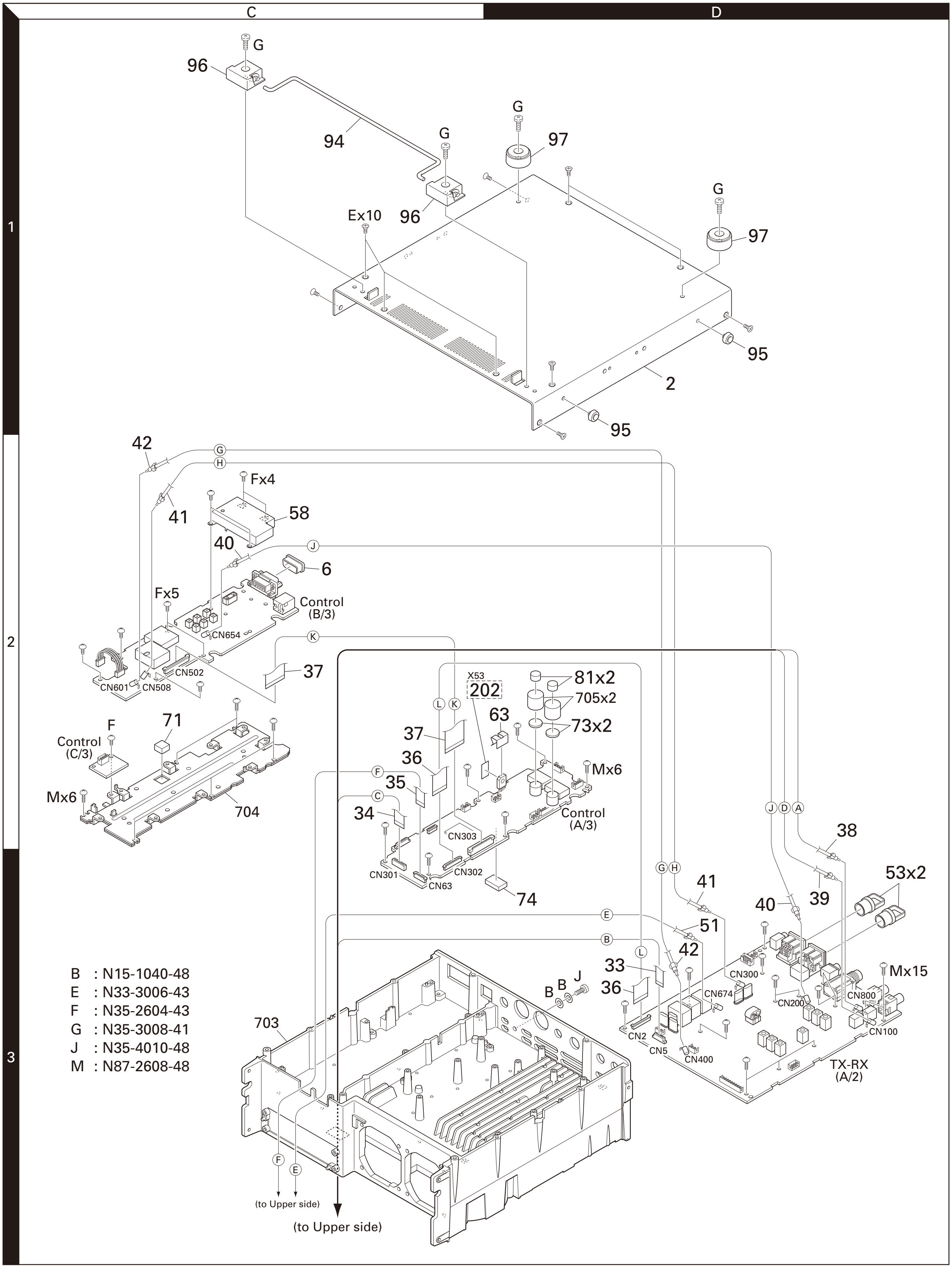
Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
Q267			2SB1694	TRANSISTOR	
Q268		✻	INK0010AU1-T1	FET	
Q269			RT1N436U-T111	TRANSISTOR	
Q270,271			2SB1694	TRANSISTOR	
Q272		✻	INK0010AU1-T1	FET	
Q273			RT1N436U-T111	TRANSISTOR	
Q274			2SB1694	TRANSISTOR	
Q281,282		✻	2SC5551AF	TRANSISTOR	
Q301			RT1N141U-T111	TRANSISTOR	
Q321-324		✻	2SK1740-4	FET	
Q351,352		✻	2SC5551AF	TRANSISTOR	
Q391		✻	2SC5551AF	TRANSISTOR	
Q421			RT1N141U-T111	TRANSISTOR	
Q431			2SC3356-A	TRANSISTOR	
Q451		✻	2SC5551AF	TRANSISTOR	
Q453-456			RT1N436U-T111	TRANSISTOR	
Q471-474			RT1N436U-T111	TRANSISTOR	
Q475-477			2SC5383-T111	TRANSISTOR	
Q521,522		✻	2SC5551AF	TRANSISTOR	
Q541			2SC3356-A	TRANSISTOR	
Q551			2SC3356-A	TRANSISTOR	
Q571			2SC5383-T111	TRANSISTOR	
Q591			RT1N141U-T111	TRANSISTOR	
Q631			RT1N436U-T111	TRANSISTOR	
Q641			2SC3356-A	TRANSISTOR	
Q651-653			2SC3356-A	TRANSISTOR	
Q654			2SC5383-T111	TRANSISTOR	
Q660,661		✻	2SC3134	TRANSISTOR	
Q662			2SA1037AK	TRANSISTOR	
Q663,664			2SC3356-A	TRANSISTOR	
Q665,666			2SC5383-T111	TRANSISTOR	
Q667			2SK1824-A	FET	
Q668-670			2SC5383-T111	TRANSISTOR	
Q671			RT1P141U-T111	TRANSISTOR	
Q702			2SC5383-T111	TRANSISTOR	
Q721			3SK293-F	FET	
Q741			2SK1830F	FET	
Q742			2SC3356-A	TRANSISTOR	
Q781,782		✻	INK0010AU1-T1	FET	
Q783			NESG260234	TRANSISTOR	
Q784		✻	RT5P431C-T112	TRANSISTOR	
Q801,802			RT1N436U-T111	TRANSISTOR	
Q803,804			2SC5383-T111	TRANSISTOR	
Q805			2SC4617(R)	TRANSISTOR	
Q806			2SK208-F(Y)	FET	
Q807			2SC5383-T111	TRANSISTOR	
Q841			RN47A5-F	TRANSISTOR	
Q842			2SC5383-T111	TRANSISTOR	
Q861,862			RT1N436U-T111	TRANSISTOR	
Q903			RT1N436U-T111	TRANSISTOR	
Q904			2SB1188(Q,R)	TRANSISTOR	
Q905			RT1N141U-T111	TRANSISTOR	
Q906		✻	INK0010AU1-T1	FET	
Q907			2SB1188(Q,R)	TRANSISTOR	
Q908,909		✻	RT5P431C-T112	TRANSISTOR	
Q910		✻	INK0010AU1-T1	FET	
Q911			RT1N436U-T111	TRANSISTOR	
Q915-917			HN7G01FU-F	TRANSISTOR	
Q918			RT1N436U-T111	TRANSISTOR	
Q920			HN7G01FU-F	TRANSISTOR	
Q925			RT1N436U-T111	TRANSISTOR	
TH421			157-101-65001	THERMISTOR	
TH460			157-101-65001	THERMISTOR	
TH531			157-101-65001	THERMISTOR	
TH591,592			NCP18WB473J0S	THERMISTOR	
TH701			157-302-65801	THERMISTOR	
TH702,703			157-102-65001	THERMISTOR	
TH721			157-302-65801	THERMISTOR	
TH722			157-101-65001	THERMISTOR	

EXPLODED VIEW (MAIN BODY UPPER SIDE)



Parts with the exploded numbers larger than 700 are not supplied.

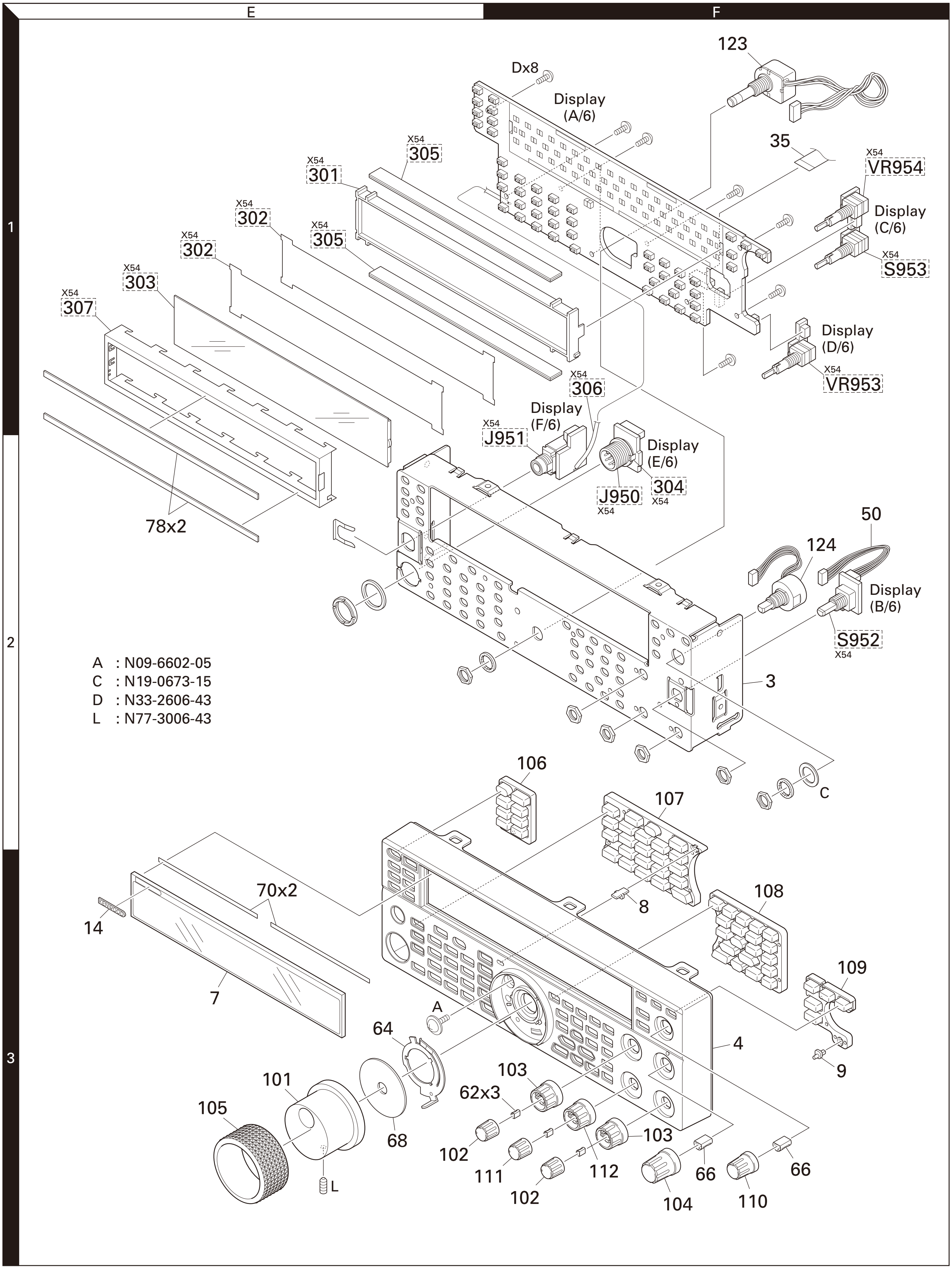
EXPLODED VIEW (MAIN BODY LOWER SIDE)



B : N15-1040-48
E : N33-3006-43
F : N35-2604-43
G : N35-3008-41
J : N35-4010-48
M : N87-2608-48

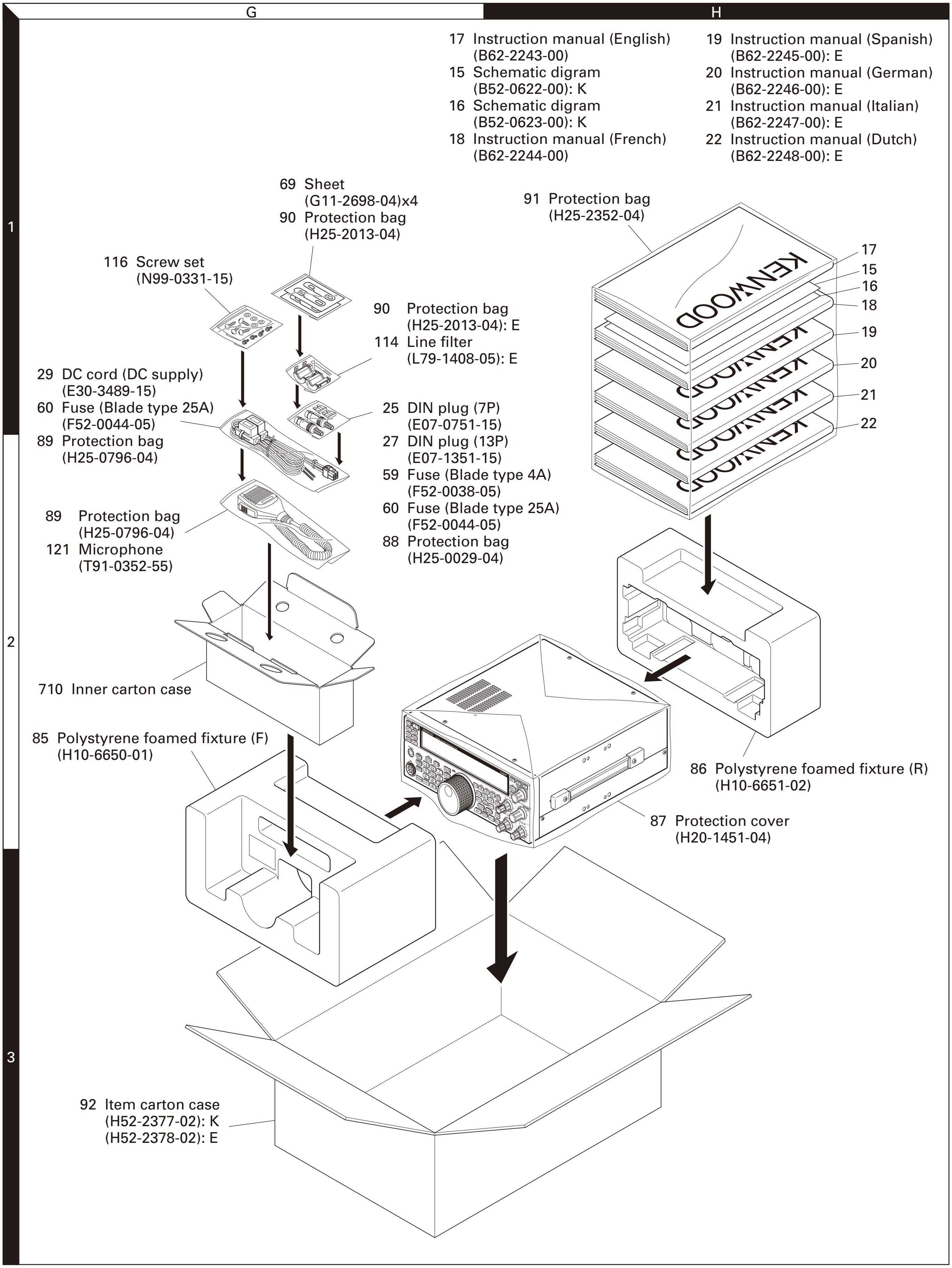
Parts with the exploded numbers larger than 700 are not supplied.

EXPLODED VIEW (PANEL)



Parts with the exploded numbers larger than 700 are not supplied.

PACKING



Parts with the exploded numbers larger than 700 are not supplied.

ADJUSTMENT

Updating the Firmware

The firmware of the main MCU and DSP can be updated using the “TS-590 Update” update software. Update the firmware according to the procedure displayed in update software.

Refer to the help file of the update software for a detailed procedure.

Download the latest “TS-590 Update” update software from the following URL:
http://www.kenwood.com/i/products/info/amateur/software_download.html
* The URL may change without notice.

Note: Update the firmware after replacing the main MCU or Flash memory.

Required Test Equipment

1. DC Voltmeter (DC V.M)
1) Input resistance: More than 1MΩ
2) Voltage range: 1.5 to 1000V AC/DC

Note: A high-recision multimeter may be used. However, accurate readings can not be obtained for high- impedance circuits.

2. DC Ammeter
1) Current range: 100mA, 1.5A, 30A, high-precision ammeter may be used.

3. RF VTVM (RF V.M)
1) Input impedance: 1MΩ and less than 3pF, min.
2) Voltage range: 10mV to 300V
3) Frequency range: 10kHz to 500MHz

4. AF Voltmeter (AF V.M)
1) Frequency range: 50Hz to 10kHz
2) Input resistance: 1MΩ or greater
3) Voltage range: 10mV to 30V

5. AF Generator (AG)
1) Frequency range: 200Hz to 5kHz
2) Output: 1mV or less to 1V, low distortion

6. AF Dummy Load (DM. SP)
1) Impedance: 8Ω
2) Dissipation: 3W or greater

7. Oscilloscope
Requires high sensitivity, and external synchronization capability (150MHz or greater).

8. Standard Signal Generator (SSG)
1) Frequency range: 50kHz to 60MHz
2) Output: –133dBm/0.1µV to 7dBm/1V
3) Output impedance: 50Ω
4) AM and FM modulation can be possible

Note: Generator must be frequency stable.

9. Frequency Counter (f. counter)
1) Minimum input voltage: 50mV
2) Frequency range: 150MHz or greater

10. Noise Generator (Noise G.)
Must generate ignition noise containing harmonics beyond 60MHz.

11. Audio Analyzer

12. RF Dummy Load
1) Impedance: 150Ω and 50Ω
2) Dissipation: 150W or greater

13. Linear Detector
1) Frequency range: 60MHz or greater

14. Power Meter
1) Impedance: 50Ω
2) Dissipation: 300W continuous or greater
3) Frequency limits: 60MHz or greater

15. Spectrum Analyzer
1) Frequency range: 100kHz to 140MHz or greater
2) Bandwidth: 1kHz to 3MHz

16. Tracking Generator

17. Directional Coupler

18. Monitor Receiver

19. Microphone
MC-43S or MC-60S8

20. Distortion Meter

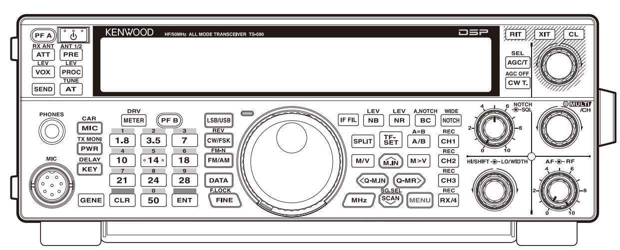
21. Double Signal Pad (50Ω)

Preparation

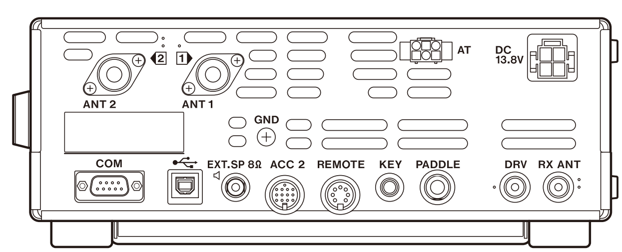
Unless otherwise specified, knobs and switches should be set as follows.

POWER .... ON
NOTCH .... Center
AF .... MIN
RF .... MAX
SQL .... MIN

■ **Front panel**



■ **Rear panel**

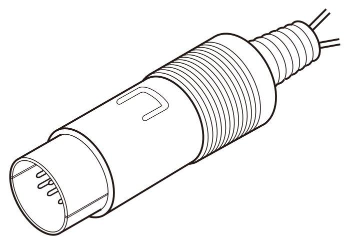


ADJUSTMENT

Service Jig

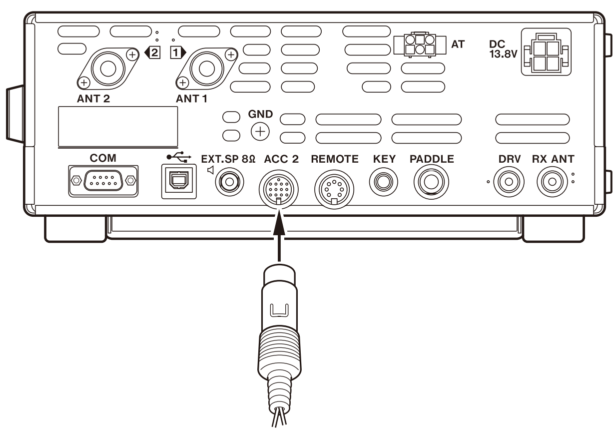
■ ACC 2 connector short plug

Use the same adjustment jig as the TS-570.



■ How to use the ACC 2 connector short plug

Insert the adjustment jig into the ACC 2 connector located on the rear panel of the transceiver.



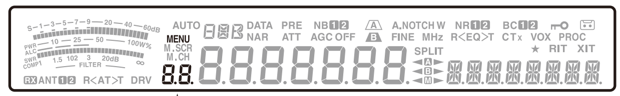
Adjustment Mode

■ Outline

1. You can adjust the transceiver in service adjustment mode (adjustment using the panel keys) or with manual adjustment (turning a coil and trimmer, etc). The service adjustment mode (hereinafter referred to as "adjustment mode") has 63 items (Menu No. 00 to 62) and all adjustment data is stored in the EEPROM (X53-446 A/3: IC309).
2. You can enter adjustment mode and change each setting data.
3. New data is written to the EEPROM by performing Menu No. 60 writing.

■ Operation procedures in adjustment mode

1. How to start the adjustment mode
- Insert the adjustment jig into the ACC 2 connector located on the rear panel of the transceiver.
- Turn the transceiver ON while pressing the [MIC] key and [NR] key, to enter adjustment mode and the Menu No. appears on the Memory channel number display. Remove the adjustment jig from the transceiver when the Menu No. appears.



Menu No.

2. Select the adjustment mode Menu No.
   Turn the [MULTI/CH] knob to change the Menu No.
3. Change the adjustment mode setting data
   Setting data can be changed using the [M.IN] or [SCAN] key.
4. Write the adjustment mode data
   Press the [M.IN] or [SCAN] key on the main unit or the [UP] or [DWN] key on the microphone on Menu No. 60.
5. Cancel the adjustment mode
   Press the [CLR] key to return to normal VFO mode.

Note: When the power is turned OFF during the adjustment mode, adjustment mode is canceled.

■ Adjustment Mode Menu (Menu No. 00~62)

No.	Adjustment Item	Display	Condition		
			Frequency (MHz)	RX IF (MHz)	Mode
00	CAR Point	10M 2.7k	1.81	73	USB
01		11M 2.7k	1.81	11	USB
02		11M 500H	1.81	11	CW
03	HF 11M IF Gain	HF11 GAIN	14.2	11	USB
04	HF 73M IF Gain	HF73 GAIN	14.2	73	USB
05	11M Mix BAL	HF11 BAL	0.136	11	USB
06	73M Mix BAL	HF73 BAL	0.100	73	USB
07	AGC Reference	AGC REF	14.2	73	USB
08	HF S-Meter	HF.SSB S1	14.2	11	USB
09		HF.SSB S9			
10		HF.SSB SF			
11	HF FM S-Meter	HF.FM. S1	29.2	73	FM
12		HF.FM.SFUL			
13	HF FM Squelch	HF.FM.SQ.TH	29.2	73	FM
14		HF.FM.SQ.TI			
15	50M IF Gain	50. GAIN	50.2	73	USB
16	50M S-Meter	50.SSB S1	50.2	73	USB
17		50.SSB S9			
18		50.SSB SF			
19	50M FM S-Meter	50.FM S1	50.2	73	FM
20		50.FMSFUL			
21	50M FM Squelch	50.FM.SQ.TH	50.2	73	FM
22		50.FM.SQ.TI			
23	ALC Reference	ALC REF	14.1	73	USB
24	POC/ Power Meter	POC 100W	14.1	73	CW
25		P.MTR 100W	14.1		
26		50M 100W	50.1		

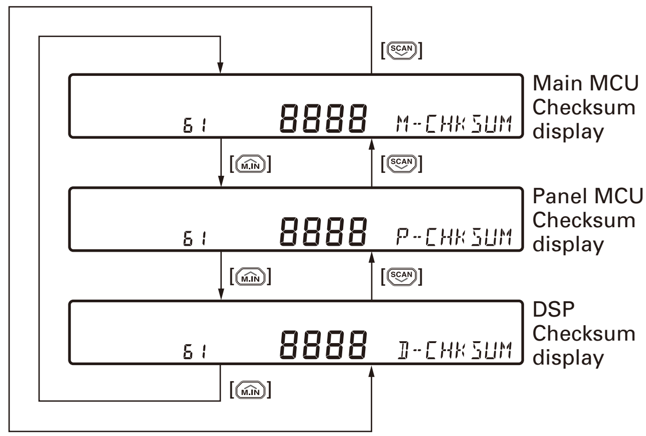
ADJUSTMENT

No.	Adjustment Item	Display	Condition		
			Frequency (MHz)	RX IF (MHz)	Mode
27		50P.M100W	50.1		
28		POC 50W			
29		P.MTR 50W			
30		POC 25W			
31	POC/ Power Meter	P.MTR 25W		73	CW
32		POC 10W	14.1		
33		P.MTR 10W			
34		POC 5W			
35		P.MTR 5W			
36	TX Gain	TGC 14M	14.1	73	CW
37	ALC Meter	ALC.START	14.1	73	CW
38		ALC.MAX			
39		TGC LW	0.136		
40		TGC 1.8M	1.83		
41		TGC 3.5M	3.51		
42		TGC 5M	5.30	11	
43		TGC 7M	7.01		
44	TGC	TGC 10M	10.1		CW
45		TGC 18M	18.1		
46		TGC 21M	21.1		
47		TGC 24M	24.9		
48		TGC 28M	29.1	73	
49		TGC 50M	50.1		
50		PGC 50W			
51	PGC	PGC 25W	14.1	73	CW
52		PGC 10W			
53		PGC 5W			
54	FM Deviation	DEV.WIDE	29.1	11	FM
55		DEV.NAROW		73	
56	Current	CURRENT	28.0	73	USB
57	PRO	SWR PRO	14.1		USB
58	SWR	HF SWR	14.1	73	USB
59		50M SWR	50.1		USB
60	WRITE	WRITE ROM	-	-	-
61	CHECKSUM	M-CHKSUM	-	-	-
62	Display check	-	-	-	-

• MENU No.61 is a checksum confirmation mode

The checksum of the main MCU, the panel MCU, and the DSP can be confirmed using the [M.IN] key or [SCAN] key.

- The checksum value of the main MCU appears on the 7 segment display while [M-CHKSUM] appears on the 13 segment display.
- The checksum value of the panel MCU appears on the 7 segment display while [P-CHKSUM] appears on the 13 segment display.
- The checksum value of the DSP appears on the 7 segment display while [D-CHKSUM] appears on the 13 segment display.



ADJUSTMENT

Display Check

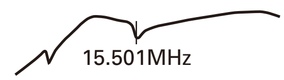
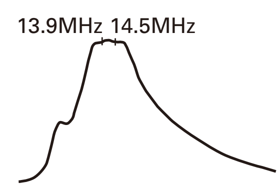
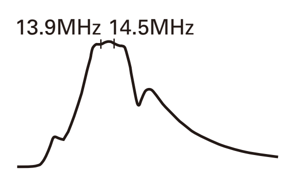
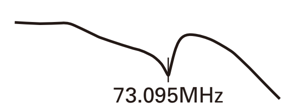
Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting and full reset	1) Connect the DC cord to the DC power supply. DC IN: DC 13.8V							
	2) Full reset (1) Turn the transceiver ON by pressing the power switch while the [A/B] key is pressed, and the reset confirmation message appears. (2) Turn the [MULTI/CH] control and select "FULL RESET". (3) Press [A/B] to perform the Full reset.				Front panel	LCD	After displaying "HELLO", the display is reset as follows; DISP f.: 14.000.00 Mode: USB Meter: ALC ANT: 1 AGC PRE	Display should be normal. Should be at the reset frequency.
2. LCD all segments light	1) Menu No.: 62						Check	LCD all segments light.

PLL Section

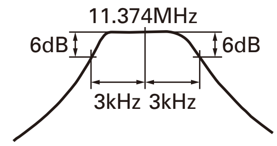
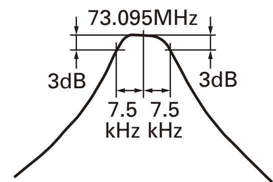
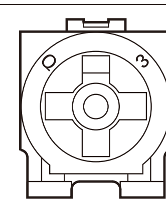
Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. LO2 level	1) Display f.: 14.100MHz Mode: FM Disconnect the cable from CN508 and insert a cable from the spectrum analyzer. After the adjustment, connect the cable to CN508.	Spectrum analyzer	Control (B/3)	CN508 (LO2)	Control (B/3)	L505	Level max.	–15dBm or more
2. LO2 (62.4MHz) frequency	1) Display f.: 14.100MHz Mode: FM Disconnect the cable from CN508 and insert a cable from the frequency counter. After the adjustment, connect the cable to CN508.	f. counter				TC501	62.4MHz	±40Hz **Note:** If the SO-3 is installed in the transceiver, do not make the LO2 (62.4MHz) frequency adjustment.
3. LO1 level	1) Display f.: 1.900MHz Mode: USB Disconnect the cable from CN654 and insert a cable from the spectrum analyzer. After the adjustment, connect the cable to CN654.	Spectrum analyzer		CN654 (LO1)		L668 L673 L677	Level max.	–7dBm or more
	2) Display f.: 7.1500MHz Mode: USB Disconnect the cable from CN654 and insert a cable from the spectrum analyzer. After the adjustment, connect the cable to CN654.					L671 L676 L681	Level max.	–3dBm or more
4. Lock voltage	1) Display f.: 14.100MHz Mode: FM	DC V.M		CV		TC801	2.5V	±0.1V

ADJUSTMENT

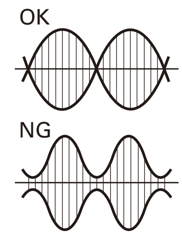
Receiver Section

Item	Condition	Measurement: Test-equipment	Measurement: Unit	Measurement: Terminal	Adjustment: Unit	Adjustment: Parts	Adjustment: Method	Specifications / Remarks
• Perform the following in the adjustment mode. Item 4 and 8~22. To terminate the adjustment menu in the middle, save your settings with Menu No. 60.								
1. Trap frequency (E type only) • 15.5MHz	1) Display f.: 15.501MHz Mode: USB PRE-AMP: ON	Tracking generator Spectrum analyzer	Rear panel TX-RX (A/2)	ANT 1 CN201	TX-RX (A/2)	TC102	Adjust TC102 to get a null point at 15.501MHz as shown.	
• 11.7MHz	2) Display f.: 11.700MHz Mode: USB PRE-AMP: ON					TC101	Adjust TC101 to get a null point at 11.7MHz as shown. Repeat the trap frequency adjustment 2 to 3 times, alternating between 15.5MHz and 11.7MHz.	
2. HF BPF	1) Display f.: 7.200MHz Mode: USB PRE-AMP: ON					L133 L150 L167	Adjust the coils to obtain the frequency response as shown.	
	2) Display f.: 14.200MHz Mode: USB PRE-AMP: ON					L134 L153 L168		**K type**  **E type** 
3. IF Trap (73.095MHz)	1) Display f.: 50MHz Mode: USB PRE-AMP: ON					L135	Adjust L135 at 73.095MHz to minimum level.	

ADJUSTMENT

Item	Condition	Measurement: Test-equipment	Measurement: Unit	Measurement: Terminal	Adjustment: Unit	Adjustment: Parts	Adjustment: Method	Specifications / Remarks
4. MCF (11.374MHz)	1) Menu No.: 54 Mode: USB Spectrum analyzer setting Center f.: 11.374MHz Frequency span: 20kHz XdB/DIV: 10dB TG level: 0dBm RBW: 300Hz VBW: 1kHz Connect the tracking generator output to CN301. Connect the spectrum analyzer input to CN302.	Tracking generator Spectrum analyzer	TX-RX (A/2)	CN301 CN302	TX-RX (A/2)	L301 L302	Adjust the coils to obtain the frequency response as shown.	
5. MCF (73.095MHz)	1) Display f.: 29.200MHz Mode: FM Spectrum analyzer setting Center f.: 73.095MHz Frequency span: 100kHz XdB/DIV: 10dB TG level: 0dBm RBW: 3kHz VBW: 10kHz Connect the tracking generator output to CN303. Connect the spectrum analyzer input to CN304.			CN303 CN304		L326 L374 L375 L376		
6. RX Trap • 11.3745MHz	1) Display f.: 21.4MHz Mode :USB PRE-AMP: ON SSG f.: 11.3745MHz SSG output: –30dBm (7.07mV)	SSG AF V.M	Rear panel	ANT 1 EXT. SP		L253 L255	Check S-meter is not appear. AF output min. Repeat adjust for 2 to 3 times.	If S-meter is appear, turn SSG level settings down until S-meter is not appear.
• 44.150MHz	2) Display f.: 21.4MHz Mode: USB PRE-AMP: ON SSG f.: 44.150MHz SSG output: –30dBm (7.07mV)					TC105	Check S-meter is not appear. AF output min.	
7. FM discriminator	1) Display f.: 29.200MHz Mode: FM PRE-AMP: ON AF output: 0.63V/8Ω SSG f.: 29.200MHz SSG output: –53dBm (0.501mV) MOD: 1kHz DEV: 3kHz	SSG Oscilloscope AF V.M Distortion meter DM.SP Audio analyzer				L595	Adjust the L595 to AF maximum output of 0.63V/ 8 ohms. Check the distortion and the waveform is a good sine wave.	AF max. 2.3% or less
8. 1st mixer balance	1) Adjustment of VR261					VR261	Adjust the volume position of VR261 as shown.	
	2) Menu No.: 06 (100kHz, USB) PRE-AMP: OFF SSG: OFF	SSG AF V.M	Rear panel	ANT 1 EXT. SP		VR321	Noise min.	

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
9. Carrier point (XF473 10.695M /2.7k)	1) Menu No.: 00 (1.81MHz, USB) AGC: OFF SSG1 f.: 1.81010MHz SSG2 f.: 1.81290MHz SSG output: –33dBm (5.01mV)	SSG1 SSG2 2 signal pad Oscilloscope	Rear panel TX-RX (A/2)	ANT 1 TP2 (CAR)	Front panel	[M.IN] or [SCAN]	Change the adjustment values to get the waveform as shown.	
10. Carrier point (XF474 11.374M /2.7k)	1) Menu No.: 01 (1.81MHz, USB) AGC: OFF SSG1 f.: 1.81010MHz SSG2 f.: 1.81290MHz SSG output: –33dBm (5.01mV)							
11. Carrier point (XF475 11.374M /500)	1) Menu No.: 02 (1.81MHz, CW) AGC: OFF SSG1 f.: 1.80970MHz SSG2 f.: 1.81030MHz SSG output: –33dBm (5.01mV)							
12. AGC start level (11M)	1) Menu No.: 03 (14.2MHz, USB) SSG f.: 14.201MHz SSG output: –110dBm (0.707μV)	SSG Oscilloscope AF V.M DM.SP	Rear panel	ANT 1 EXT.SP			Adjust data until the display shown "1 to 2".	
13. AGC start level (73M) • 14M	1) Menu No.: 04 (14.2MHz, USB) SSG f.: 14.201MHz SSG output: –110dBm (0.707μV)							
14. HF SSB S-meter • S1	1) Menu No.: 08 (14.2MHz, USB) SSG f.: 14.201MHz SSG output: –107dBm (1μV)						Set the SSG, then press the [M.IN] or [SCAN] key.	S-meter lights up to S1 position.
• S9	2) Menu No.: 09 (14.2MHz, USB) SSG output: –81dBm (19.9μV)							S-meter lights up to S9 position.
• Full scale (Lights up all)	3) Menu No.: 10 (14.2MHz, USB) SSG output: –21dBm (19.9mV)							S-meter lights up all.
15. HF FM S-meter • S1	1) Menu No.: 11(29.2MHz, FM) SSG f.: 29.200MHz SSG output: –117dBm (0.316μV) MOD: 1kHz DEV: 3kHz							S-meter lights up to 1dot position.
• Full scale (Lights up all)	2) Menu No.: 12 (29.2MHz, FM) SSG output: –95dBm (3.98μV)							S-meter lights up all.
16. HF FM SQL threshold	1) Menu No.: 13 (29.2MHz, FM) SSG output: OFF MOD: 1kHz DEV: 3kHz							
17. HF FM SQL tight	1) Menu No.: 14 (29.2MHz, FM) SSG f.: 29.200MHz SSG output: –113dBm (0.501μV) MOD: 1kHz DEV: 3kHz							
18. AGC start level (73M) • 50M	1) Menu No.: 15 (50.2MHz, USB) SSG f.: 50.201MHz SSG output: –114dBm (0.4μV)						Adjust data until the display shown "1 to 2".	

ADJUSTMENT

Item	Condition	Measurement: Test-equipment	Measurement: Unit	Measurement: Terminal	Adjustment: Unit	Adjustment: Parts	Adjustment: Method	Specifications / Remarks
19. 50M SSB S-meter • S1	1) Menu No.: 16 (50.2MHz, USB) SSG f.: 50.201MHz SSG output: –111dBm (0.63μV)	SSG Oscilloscope AF V.M DM.SP	Rear panel	ANT 1 EXT.SP	Front panel	[M.IN] or [SCAN]	Set the SSG, then press the [M.IN] or [SCAN] key.	S-meter lights up to S1 position.
• S9	2) Menu No.: 17 (50.2MHz, USB) SSG output: –85dBm (12.6μV)							S-meter lights up to S9 position.
• Full scale (Lights up all)	3) Menu No.: 18 (50.2MHz, USB) SSG output: –25dBm (12.6mV)							S-meter lights up all.
20. 50M FM S-meter • S1	1) Menu No.: 19 (50.2MHz, FM) SSG f.: 50.2MHz SSG output: –117dBm (0.316μV) MOD: 1kHz DEV: 3kHz							S-meter lights up to 1dot position.
• Full scale (Lights up all)	2) Menu No.: 20 (50.2MHz, FM) SSG output: –95dBm (3.98μV)							S-meter lights up all.
21. 50M FM SQL threshold	1) Menu No.: 21 (50.2MHz, FM) SSG output: OFF MOD: 1kHz DEV: 3kHz							
22. 50M FM SQL tight	1) Menu No.: 22 (50.2MHz, FM) SSG f.: 50.200MHz SSG output: –113dBm (0.501μV) MOD: 1kHz DEV: 3kHz							

• Writing data: After items 4 and 8~22 have been adjusted;
1) Menu No. : 60
2) [M.IN] or [SCAN] key: Push once time. Display "rEAdy" → "good" (If "nG" is displayed, enter data again.)
3) [CLR] key: Push once time.

Item	Condition	Measurement: Test-equipment	Measurement: Unit	Measurement: Terminal	Adjustment: Unit	Adjustment: Parts	Adjustment: Method	Specifications / Remarks
23. S/N Check (Reference)	1) Display f.: Refer to Table 1. AF output: 0.63V/8Ω AGC: FAST SSG f.: Refer to Table 1. However, USB : +1kHz LSB: –1kHz PRE-AMP: ON ATT: OFF	SSG Oscilloscope AF V.M DM.SP	Rear panel	ANT 1 EXT.SP				

Frequency	Mode	SSG RF level (dBm)	SSG MOD	DEV	Measurement	Spec.
550kHz	AM	–85	1kHz	60%→OFF	S/N	>10dB
1.8MHz	LSB	–119	OFF	OFF	S/N	>10dB
3.7MHz	CW	–123	OFF	OFF	S/N	>10dB
5.3MHz	LSB	–119	OFF	OFF	S/N	>10dB
7.2MHz	LSB	–119	OFF	OFF	S/N	>10dB
14.2MHz	USB	–119.5	OFF	OFF	S/N	>10dB
18.2MHz	USB	–119.5	OFF	OFF	S/N	>10dB
21.2MHz	FSK	–119.5	OFF	OFF	S/N	>10dB
24.8MHz	USB	–123	OFF	OFF	S/N	>10dB
29.6MHz	FM	–119	1kHz	3kHz	SINAD	>12dB
50.2MHz	USB	–123	OFF	OFF	S/N	>10dB

Table 1

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
24. PRE-AMP gain	1) Display f.: 14.200MHz Mode: USB PRE-AMP: ON AGC: FAST AF output: 0.63V/8Ω SSG f.: 14.201MHz SSG output: –119dBm (0.25μV)	SSG Oscilloscope AF V.M DM.SP	Rear panel	ANT 1 EXT.SP			Set the AF level at 0dB.	
	2) PRE-AMP: OFF						Check the AF level.	–(5~15)dB
25. RF ATT	1) Display f.: 14.200MHz Mode: USB ATT: ON AGC: FAST AF output: 0.63V/8Ω SSG f.: 14.201MHz SSG output: –107dBm (1μV)						Set the AF level at 0dB.	
	2) PRE-AMP: OFF						Check the AF level.	–(10~14)dB
26. NB gain	1) Display f.: 14.200MHz Mode: USB PRE-AMP: ON AGC: FAST NB1: ON SSG f.: 14.201MHz SSG output: –103dBm (1.58μV)	DC V.M SSG Oscilloscope AF V.M DM.SP Noise G.	TX-RX (B/2) Rear panel	TP601 (NB) ANT1 EXT.SP	TX-RX (B/2)	L653 L664 L665	Voltage min.	4V or less
	2) NB1: OFF → ON						Adjust output of noise generator to S5, and check.	Noise should disappear when NB1 is ON.
27. VGS-1 (Option)	1) Disconnect the antenna cable from the transceiver. Connect the VGS-1 to CN901 on the Control unit (A/3). Display f.: 14.100MHz Mode: USB AF knob: MIN				Front panel	[PF A]	1 push	The display frequency can be heard vocally.
	2) Connect a microphone to the MIC jack.					[CH1]	Hold down [CH1] key, and talk into the microphone for approximately 10 seconds.	
							Press the [CH1] key again.	The recorded voice message is played back.

ADJUSTMENT

Transmitter Section

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
• Perform the following in the adjustment mode. Item 2~24. To terminate the adjustment menu in the middle, save your settings with Menu No. 60.								
1. Final idling current	1) Display f.: 14.100MHz Mode : USB Final unit (A/2) VR1, 2, 3, 4: MIN Transmit	Ammeter	Final (A/2)	DC IN	Final (A/2)		Check the default current (I_2) of DC IN.	
						VR1	I_2 + 500mA = I_A	±50mA
						VR2	I_A + 1000mA = I_B	±100mA
						VR3	I_B + 700mA = I_C	±50mA
						VR4	I_C + 700mA = I_D	±50mA
2. ALC reference voltage	1) Menu No.: 23 (14.1MHz, USB) Transmit	DC V.M	TX-RX (A/2)	TP1 (ALC)	Front panel	[M.IN] or [SCAN]	Set the adjustment value within the limit of the specified voltage.	2.7V±0.1V
3. HF Max power (100W)	1) Menu No.: 24 (14.1MHz, CW) Transmit	Power meter 150W ATT	Rear panel	ANT 1			Set the adjustment value within the limit of the specified power.	100W±3.0W
4. 14.1MHz Null	1) Menu No.: 24 (14.1MHz, CW) Transmit	Power meter 150W ATT DC V.M	Rear panel Final (A/2)	ANT 1 TP2 (VSR)	Final (A/2)	TC1	VSR voltage min.	0.3V or less
5. Power meter 100W	1) Menu No.: 25 (14.1MHz, CW) Transmit	Power meter 150W ATT	Rear panel	ANT 1	Front panel	[M.IN]	1 push	Power meter lights up to 100W position.
6. 50M Max power (100W)	1) Menu No.: 26 (50.1MHz, CW) Transmit					[M.IN] or [SCAN]	Set the adjustment value within the limit of the specified power.	100W±3.0W
7. 50M Power meter 100W	1) Menu No.: 27 (50.1MHz, CW) Transmit					[M.IN]	1 push	Power meter lights up to 100W position.
8. POC 50W	1) Menu No.: 28 (14.1MHz, CW) Transmit					[M.IN] or [SCAN]	Set the adjustment value within the limit of the specified power.	50W±2.0W
9. Power meter 50W	1) Menu No.: 29 (14.1MHz, CW) Transmit					[M.IN]	1 push	Power meter lights up to 50W position.
10. POC 25W	1) Menu No.: 30 (14.1MHz, CW) Transmit					[M.IN] or [SCAN]	Set the adjustment value within the limit of the specified power.	25W±1.0W
11. Power meter 25W	1) Menu No.: 31 (14.1MHz, CW) Transmit					[M.IN]	1 push	Power meter lights up to 25W position.

ADJUSTMENT

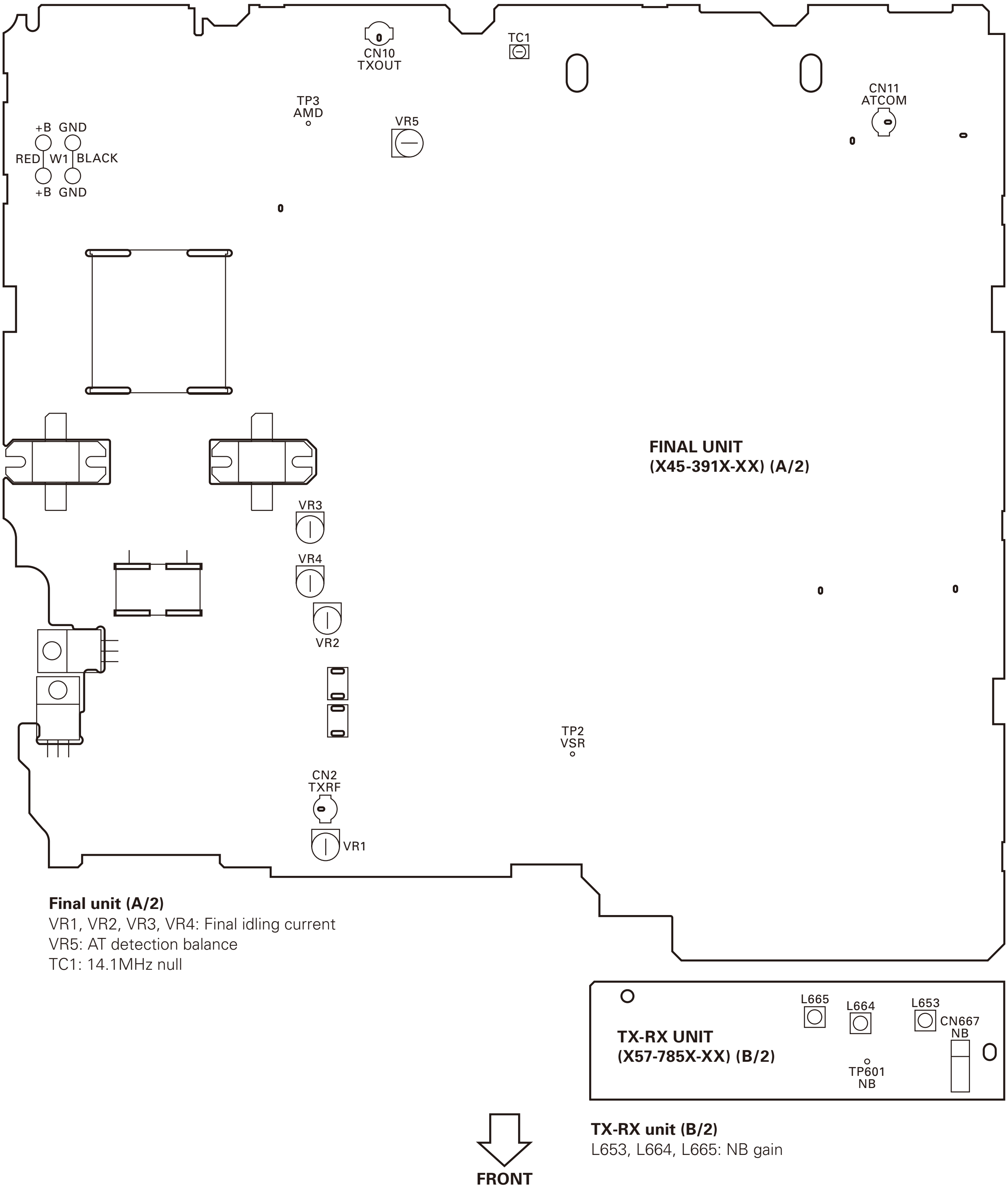
Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
12. POC 10W	1) Menu No.: 32 (14.1MHz, CW) Transmit	Power meter 150W ATT	Rear panel	ANT 1	Front panel	[M.IN] or [SCAN]	Set the adjustment value within the limit of the specified power.	10W±0.5W
13. Power meter 10W	1) Menu No.: 33 (14.1MHz, CW) Transmit					[M.IN]	1 push	Power meter lights up to 10W position.
14. POC 5W	1) Menu No.: 34 (14.1MHz, CW) Transmit					[M.IN] or [SCAN]	Set the adjustment value within the limit of the specified power.	5.0W±0.3W
15. Power meter 5W	1) Menu No.: 35 (14.1MHz, CW) Transmit					[M.IN]	1 push	Power meter lights up to 5W position.
16. TGC GAIN	1) Menu No.: 36 (14.1MHz, CW) Transmit					[M.IN] or [SCAN]	Set the adjustment value within the limit of the specified power.	100W±3.0W
17. ALC meter • Start point	1) Menu No.: 37 (14.1MHz, CW) Transmit					[M.IN]	1 push	ALC meter lights up to 1.
• Zone max. (15 dots) point	2) Menu No.: 38 (14.1MHz, CW) Transmit							ALC meter zone max.
18. Band TGC (HF) • 1.8M	1) Menu No.: 40 (1.83MHz, USB) Transmit					[M.IN] or [SCAN]	Set the adjustment value to become the specified ALC meter.	ALC meter 15 dots
• 3.5M	2) Menu No.: 41 (3.51MHz, USB) Transmit							
• 5.0M	3) Menu No.: 42 (5.3MHz, USB) Transmit							
• 7.0M	4) Menu No.: 43 (7.01MHz, USB) Transmit							
• 10M	5) Menu No.: 44 (10.1MHz, USB) Transmit							
• 18M	6) Menu No.: 45 (18.1MHz, USB) Transmit							
• 21M	7) Menu No.: 46 (21.1MHz, USB) Transmit							
• 24.9M	8) Menu No.: 47 (24.9MHz, USB) Transmit							
• 28M	9) Menu No.: 48 (28.1MHz, USB) Transmit							
19. Band TGC • 50M	1) Menu No.: 49 (50.1MHz, USB) Transmit							

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications / Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
20. Power PGC • 50W	1) Menu No.: 50 (14.1MHz, CW) Transmit	Power meter 150W ATT	Rear panel	ANT 1	Front panel	[M.IN] or [SCAN]	Set the adjustment value to become the specified ALC meter.	ALC meter 15 dots
• 25W	2) Menu No.: 51 (14.1MHz, CW) Transmit							
• 10W	3) Menu No.: 52 (14.1MHz, CW) Transmit							
• 5W	4) Menu No.: 53 (14.1MHz, CW) Transmit							
21. FM deviation • Wide	1) Menu No.: 54 (29.1MHz, FM) Transmit	Power meter Linear detector 150W ATT					4.1kHz According to the larger +, –.	±0.1kHz
• Narrow	2) Menu No.: 55 (29.1MHz, FM) Transmit						2.1kHz According to the larger +, –.	±0.1kHz
22. Current protection	1) Menu No.: 56 (24.9MHz, USB) Transmit DC power supply DC IN: **DC 15.9V**	Ammeter					Set the adjustment value within the limit of the specified current.	21.0A±0.1A
23. SWR protection	1) Menu No.: 57 (14.1MHz, CW) Transmit DC power supply DC IN: DC 13.8V 150Ω dummy connection : Use a cable that is 1m long	150Ω dummy load Through type power meter					Set the adjustment value within the limit of the specified power.	40W±1W
24. SWR meter • 14M (SWR: 3)	1) Menu No.: 58 (14.1MHz, CW) Transmit DC power supply DC IN: DC 13.8V 150Ω dummy connection : Use a cable that is 1m long					[M.IN]	1 push	SWR meter lights up to 3 position.
• 50M (SWR: 3)	2) Menu No.: 59 (51.9MHz, FM) Transmit DC power supply DC IN: DC 13.8V 150Ω dummy connection : Use a cable that is approx. 18cm long							
• Writing data : After items 2~24 have been adjusted; 1) Menu No.: 60 2) [M.IN] or [SCAN] key: Push once time. Display "rEAdy" → "good" (If "nG" is displayed, enter data again.) 3) [CLR] key: Push once time.								
25. AT detection balance	1) Display f.: 51.9MHz Mode: FM Power: 10W Transmit	Oscilloscope Power meter 150W ATT	Final (A/2)	TP3 (AMP)	Final (A/2)	VR5	Turn the VR5 to the point where the waveform on the oscilloscope changes from high to low. (Threshold point)	

ADJUSTMENT

Adjustment Points (Upper Side)

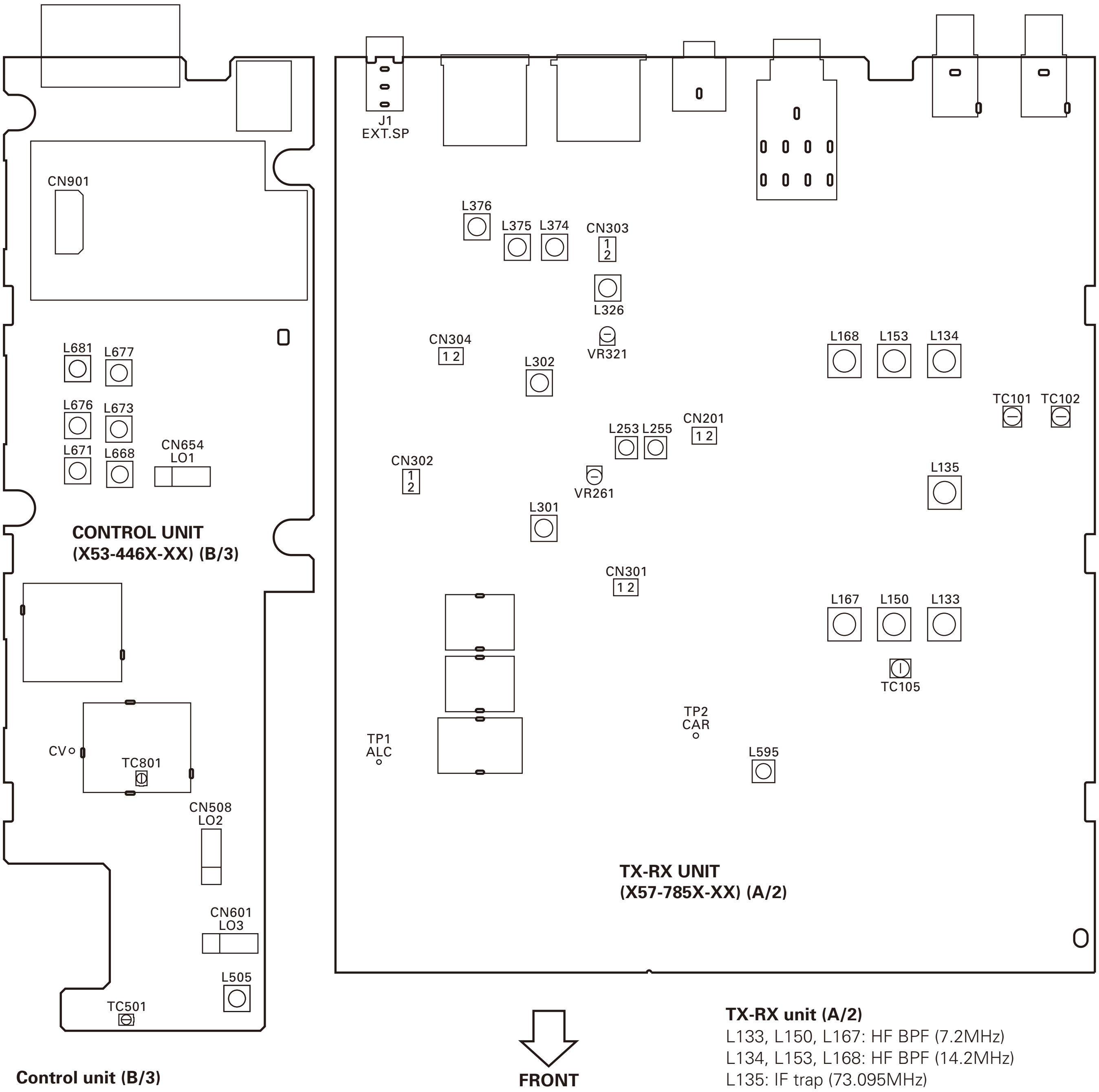


Final unit (A/2)
VR1, VR2, VR3, VR4: Final idling current
VR5: AT detection balance
TC1: 14.1MHz null

TX-RX unit (B/2)
L653, L664, L665: NB gain

ADJUSTMENT

Adjustment Points (Lower Side)



Control unit (B/3)
L505: LO2 level
L671, L676, L681: LO1 level (7.15MHz)
L668, L673, L677: LO1 level (1.9MHz)
TC501: LO2 (62.4MHz) frequency
TC801: Lock voltage

TX-RX unit (A/2)
L133, L150, L167: HF BPF (7.2MHz)
L134, L153, L168: HF BPF (14.2MHz)
L135: IF trap (73.095MHz)
L253, L255: RX trap (11.3745MHz)
L301, L302: MCF (11.374MHz)
L326, L374, L375, L376: MCF (73.095MHz)
L595: FM discriminator
TC101: Trap frequency (11.7MHz) E type only
TC102: Trap frequency (15.5MHz) E type only
TC105: RX trap (44.150MHz)
VR261, VR321: 1st mixer balance

TERMINAL FUNCTION

FINAL UNIT (X45-391X-XX A/2)

Pin No.	Name	I/O	Function
CN2 (to TX-RX unit A/2 CN800)			
1	TXRF	I	TX RF input (Coaxial)
CN3 (to EXT. AT)			
1	14S	O	Switched 14V (for external antenna tuner)
2	GND	-	GND
3	TT	I/O	External antenna tuner (AT-300) IN/ THROUGH control
4	TS	I/O	External antenna tuner (AT-300) tuning start control
5	GND	-	GND
CN4 (to Control unit A/3 CN1)			
1	14S	I	Switched 14V
2	GND	-	GND
3	14V	I	Non switched 14V
CN5 (to Control unit A/3 CN301)			
1	DATA	I	Serial data
2	CLK2	I	Serial clock
3	BOVR	O	Over voltage detection Over 19V becomes “H”
4	GND	-	GND
5	PSC	I	Power supply switch control signal “H” when power is ON
6	GND	-	GND
7	TH1	O	Thermistor detection voltage
8	AMD	O	Output voltage of amplitude detector
9	TS	I/O	External antenna tuner (AT-300) tuning start control
10	PHD	O	Output voltage of phase detector
11	TT	I/O	External antenna tuner (AT-300) IN/ THROUGH control
12	ATPWS	I	AT relay operating stop signal
13	FEN1	I	IC1, IC7, IC9 enable
14	FEN2	I	IC8, IC10 enable
CN6 (to FAN2)			
1	FAN2+	O	Supply FAN2 voltage
2	GND	-	GND
CN7 (to FAN1)			
1	FAN1+	O	Supply FAN1 voltage
2	GND	-	GND
CN8 (to INT. SPEAKER)			
1	SP	O	Speaker output
2	SPG	-	Speaker GND
CN9 (to TX-RX unit A/2 CN5)			
1	TXB	I	TX 8V
2	ID	O	Power current signal
3	33C	I	3.3V (DC/DC)
4	VSR	O	Reflected wave power detection voltage
5	SP	I	Speaker input
6	VSF	O	Forward wave power detection voltage
7	SPG	-	Speaker GND
8	GND	-	GND
9	NC	-	No connection
10	5A	I	Non switched 5V
CN10 (to Final (Relay) unit B/2 W3)			
1	TXOUT	O	TX RF output (Coaxial)
CN11 (to Final (Relay) unit B/2 W2)			
1	ATCOM	I	TX/RX relay common terminal (Coaxial)
W1 (to DC 13.8V)			
1	+B	I	Power supply voltage 13.8V
2	+B	I	Power supply voltage 13.8V
3	GND	-	GND
4	GND	-	GND
W6 (to Final (Relay) unit B/2 CN52)			
1	TXRL	O	TX relay control signal
2	GND	-	GND

FINAL (RELAY) UNIT (X45-391X-XX B/2)

Pin No.	Name	I/O	Function
CN51 (to TX-RX unit A/2 CN100)			
1	RAT	O	RAT output (Coaxial)
CN52 (to Final unit A/2 W6)			
1	TXRL	I	TX relay control signal
2	GND	-	GND
W2 (to Final unit A/2 CN11)			
1	ATCOM	I/O	TX/RX relay common (Coaxial)
W3 (to Final unit A/2 CN10)			
1	TXOUT	I	TX RF input (Coaxial)

CONTROL UNIT (X53-446X-XX A/3)

Pin No.	Name	I/O	Function
CN1 (to Final unit A/2 CN4)			
1	14S	I	Switched 14V
2	GND	-	GND
3	14V	I	Non switched 14V
CN2 (to TX-RX unit A/2 CN1)			
1	14S	O	Switched 14V
2	GND	-	GND
3	8A	O	8V (DC/DC)
CN61 (to TX-RX unit A/2 CN600)			
1	RIF	I	RX IF input
2	GND	-	GND

TERMINAL FUNCTION

Pin No.	Name	I/O	Function
CN62 (to TX-RX unit A/2 CN700)			
1	TIF	O	TX IF output
2	GND	-	GND
CN63 (to Display unit A/6 CN107)			
1	5C	O	5V
2	NC	-	No connection
3	GND	-	GND
4	MU	O	MIC up control
5	MD	O	MIC down control
6	PCTS	I	RTS signal input from Panel MCU
7	PRXD	I	Serial data input from Panel MCU
8	PRTS	O	RTS signal output to Panel MCU
9	PTXD	O	Serial data output to Panel MCU
10	BKC	O	Reduced voltage detection interrupt
11	PRST	O	Reset signal for Panel MCU
12	GND	-	GND
13	NC	-	No connection
14	33C	O	3.3V (DC/DC)
15	PWS	I	Power switch input signal
16	GND	-	GND
17	GND	-	GND
18	NC	-	No connection
19	8A	O	8V
20	8A	O	8V
CN64 (to Display (MIC) unit E/6 CN951)			
1	MIC	I	MIC signal input
2	MSG	-	MIC GND
3	MCG	-	GND
4	MU	I	MIC UP control
5	MD	I	MIC Down control
6	SS	I	MIC standby (PTT) control
7	8A	O	8V
CN65 (to TX-RX unit A/2 CN3)			
1	AF	O	Audio signal output
2	AFG	-	Audio GND
CN301 (to Final unit A/2 CN5)			
1	DATA	O	Serial data
2	CLK2	O	Serial clock
3	BOVR	I	Over voltage detection Over 19V becomes “H”
4	GND	-	GND
5	PSC	O	Power supply switch control signal “H” when power is ON
6	GND	-	GND
7	TH1	I	Thermistor detection voltage
8	AMD	I	Input voltage of amplitude detector

Pin No.	Name	I/O	Function
9	TS	I/O	External antenna tuner (AT-300) tuning start control
10	PHD	I	Input voltage of phase detector
11	TT	I/O	External antenna tuner (AT-300) IN/THROUGH control
12	ATPWS	O	AT relay operating stop signal
13	FEN1	O	IC1, IC7, IC9 enable
14	FEN2	O	IC8, IC10 enable
CN302 (to TX-RX unit A/2 CN2)			
1	5A	O	Non switched 5V
2	NC	-	No connection
3	GND	-	GND
4	DGND	-	Digital GND
5	NC	-	No connection
6	33C	O	3.3V (DC/DC)
7	IDT	I	Power current voltage
8	IBK	O	IF blanking H: Mute
9	TXC	O	TX ON/OFF H: TXB ON
10	VSFM	I	VSF meter voltage
11	VSRM	I	VSR meter voltage
12	TCS	O	VSF/VSR detector time constant control
13	ALM	I	ALC meter voltage
14	CKY	O	CKY mute signal H: Mute
15	IEN3	O	IC 13 enable
16	IEN2	O	IC11, IC12 enable
17	IEN1	O	IC14, IC15 enable
18	DATA	O	Serial data
19	CLK1	O	Serial clock
20	AD1	I	No connection
21	PHDET	I	Phone jack detection signal L: No phone jack
22	FSQL	I	FM squelch voltage
23	FSM	I	FM S-meter voltage
24	AGCV	O	AGC control voltage
25	KYS	I	KEY jack judgement signal H: Plugged
26	DASH	I	Electronic keyer dash signal L: KEY dash
27	DOT	I	Electronic keyer dot signal L: KEY dot
28	KEY	I	KEY down signal L: KEY down
29	SS	I	Standby switch L: TX
30	RTK	I	RTTY key signal
31	SQC	O	SQL control voltage H: SQ open
32	PKP	O	Inverting PKS control H: PTT ON
33	PKSR	I	PTT input for data communication L: PTT ON
34	GND	-	Analog GND
35	ANO	O	Packet data output
36	ANI	I	Packet data input

TERMINAL FUNCTION

Pin No.	Name	I/O	Function
CN303 (to Control (LO) unit B/3 CN502)			
1	GND	-	GND
2	FMOD	O	FM modulation audio
3	GND	-	GND
4	DRES	O	IC803 reset
5	DEN1	O	IC601 enable
6	SEN	O	IC651enable
7	DEN2	O	IC803 enable
8	LEN	O	IC801 enable
9	LCLK	O	Serial clock for PLL, DDS
10	LDAT	O	Serial data for PLL, DDS
11	UL	I	Unlock detection L: PLL unlock
12	GND	-	GND
13	NC	-	No connection
14	8A	O	8V
15	8A	O	8V
16	NC	-	No connection
17	33M	O	3.3V for USB (DC/DC)
18	33D	O	3.3V for RS-232C
19	NC	-	No connection
20	5C	O	5V
21	NC	-	No connection
22	UAO	I	USB audio input
23	UAI	O	USB audio output
24	DGND	-	Digital GND
25	URTS	O	USB request to send
26	UCTS	I	USB clear to send
27	UTXD	O	USB transmitted data
28	URXD	I	USB received data
29	USDA	I/O	USB serial data
30	USCL	O	USB serial clock
31	URST	O	USB reset
32	VBINT	I	USB connection interrupt input
33	TYPY	I	50W switch H: 50W
34	STPC	I	Interrupt for returning from sleep mode (PC control)
35	STS	O	RS-232C receiver bias control
36	CCTS	I	RS-232C clear to send
37	CRTS	O	RS-232C request to send
38	CTXD	O	RS-232C transmitted data
39	CRXD	I	RS-232C received data
40	TYPX	-	Type detection
41	VDGND	-	VGS-1 digital GND
42	VBSY	I	VGS-1 busy signal
43	VPLY	I	VGS-1 playback signal
44	CLK	O	VGS-1 serial clock
45	DATA	O	VGS-1 serial data
46	VEN	O	VGS-1 enable
47	VRST	O	VGS-1 reset
48	VAGND	-	VGS-1 analog GND
49	VAI	O	VGS-1 audio output
50	VAO	I	VGS-1 audio input

CONTROL (LO) UNIT (X53-446X-XX B/3)

Pin No.	Name	I/O	Function
CN502 (to Control unit A/3 CN303)			
1	VAO	O	VGS-1 audio output
2	VAI	I	VGS-1 audio input
3	VAGND	-	VGS-1 analog GND
4	VRST	I	VGS-1 reset
5	VEN	I	VGS-1 enable
6	DATA	I	VGS-1 serial data
7	CLK	I	VGS-1 serial clock
8	VPLY	O	VGS-1 playback signal
9	VBSY	O	VGS-1 busy signal
10	VDGND	-	VGS-1 digital GND
11	TYPX	-	Type detection
12	CRXD	O	RS-232C received data
13	CTXD	I	RS-232C transmitted data
14	CRTS	I	RS-232C request to send
15	CCTS	O	RS-232C clear to send
16	STS	I	RS-232C receiver bias control
17	STPC	O	Interrupt for returning from sleep mode (PC control)
18	TYPY	O	50W switch H: 50W
19	VBINT	O	USB connection interrupt input
20	URST	I	USB reset
21	USCL	I	USB serial clock
22	USDA	I/O	USB serial data
23	URXD	O	USB received data
24	UTXD	I	USB transmitted data
25	UCTS	O	USB clear to send
26	URTS	I	USB request to send
27	DGND	-	Digital GND
28	UAI	I	USB Audio In
29	UAO	O	USB Audio Out
30	NC	-	No connection
31	5C	I	5V
32	NC	-	No connection
33	33D	I	3.3V for RS-232C
34	33M	I	3.3V for USB (DC/DC)
35	NC	-	No connection

TERMINAL FUNCTION

Pin No.	Name	I/O	Function
36	8A	I	8V
37	8A	I	8V
38	NC	-	No connection
39	GND	-	GND
40	UL	O	Unlock detection L: PLL unlock
41	LDAT	I	Serial data for PLL, DDS
42	LCLK	I	Serial clock for PLL, DDS
43	LEN	I	IC801 enable
44	DEN2	I	IC803 enable
45	SEN	I	IC651 enable
46	DEN1	I	IC601 enable
47	DRES	I	IC803 reset
48	GND	-	GND
49	FMOD	I	FM modulation audio
50	GND	-	GND
CN508 (to TX-RX unit A/2 CN300)			
1	LO2	I	2nd local signal (Coaxial)
CN601 (to TX-RX unit A/2 CN400)			
1	LO3	I	3rd local signal (Coaxial)
CN654 (to TX-RX unit A/2 CN200)			
1	LO1	I	1st local signal (Coaxial)
CN901 (to Option VGS-1)			
1	VBSY	I	VGS-1 Busy Signal
2	VPLY	I	VGS-1 Playback Signal
3	NC	-	No connection
4	DATA	O	VGS-1 serial data
5	CLK	O	VGS-1 serial clock
6	VEN	O	VGS-1 enable
7	NC	-	No connection
8	VRST	O	VGS-1 reset
9	VDGND	-	VGS-1 digital GND
10	VAGND	-	VGS-1 analog GND
11	VAO	I	VGS-1 voice output
12	VAI	O	VGS-1 voice input
13	VAGND	-	VGS-1 analog GND
14	5C	O	5V
15	NC	-	No connection
16	NC	-	No connection
17	NC	-	No connection
18	NC	-	No connection
19	NC	-	No connection
20	NC	-	No connection
21	NC	-	No connection
22	NC	-	No connection
23	NC	-	No connection
24	NC	-	No connection
25	NC	-	No connection
26	NC	-	No connection
W504 (to Control (SO-3) unit C/3 CN503)			
1	REF	I	15.6MHz Option SO-3
2	GND	-	GND
3	GND	-	GND
4	5C	O	5V
J901 (COM)			
1	NC	-	No connection
2	RXD	O	Received Data
3	TXD	I	Transmitted Data
4	NC	-	No connection
5	GND	-	GND
6	NC	-	No connection
7	RTS	I	Request to send
8	CTS	O	Clear to send
9	NC	-	No connection
J902 (USB)			
1	VBUS	I	Power supply from PC (5V)
2	D–	I/O	Universal serial data
3	D+	I/O	Universal serial data
4	GND	-	GND

CONTROL (SO-3) UNIT (X53-446X-XX C/3)

Pin No.	Name	I/O	Function
CN503 (to Control (LO) unit B/3 W504)			
1	REF	O	15.6MHz Option SO-3
2	GND	-	GND
3	GND	-	GND
4	5C	I	5V

DISPLAY UNIT (X54-3700-00 A/6)

Pin No.	Name	I/O	Function
CN102 (to Main Encoder)			
1	5C	O	5V
2	MENB	I	Main encoder pulse B
3	MENA	I	Main encoder pulse A
4	GND	-	GND
CN103 (to RIT/XIT)			
1	5C	O	5V
2	RITA	I	RIT encoder pulse A
3	RITB	I	RIT encoder pulse B
4	GND	-	GND

TERMINAL FUNCTION

Pin No.	Name	I/O	Function
CN104 (to Display (MULTI/CH) unit B/6 CN965)			
1	MLED	O	Multi encoder LED (D961)
2	33C	O	3.3V (DC/DC)
3	MULB	I	Multi encoder pulse B
4	MULC	-	GND
5	MULA	I	Multi encoder pulse A
CN105 (to Display (VR) unit C/6 CN953)			
1	LB	I	Low cut encoder pulse B
2	GND	-	GND
3	LA	I	Low cut encoder pulse A
4	HB	I	Hi cut encoder pulse B
5	HA	I	Hi cut encoder pulse A
6	33C	O	3.3V (DC/DC)
7	NVOL	I	Notch volume voltage
8	SVOL	I	Squelch volume voltage
CN106 (to Display (AF/RF) unit D/6 CN966)			
1	33C	O	3.3V (DC/DC)
2	AFVOL	I	AF volume voltage
3	RFVOL	I	RF volume voltage
4	NC	-	No connection
5	GND	-	GND
CN107 (to Control unit A/3 CN63)			
1	8A	I	8V
2	8A	I	8V
3	NC	-	No connection
4	GND	-	GND
5	GND	-	GND
6	PWS	O	Power switch output signal
7	33C	I	3.3V (DC/DC)
8	NC	-	No connection
9	GND	-	GND
10	PRST	I	Reset signal for Panel MCU
11	BKC	I	Reduced voltage detection interrupt
12	PTXD	I	Serial data input from Main MCU
13	PRTS	I	RTS signal input from Main MCU
14	PRXD	O	Serial data output to Main MCU
15	PCTS	O	RTS signal output to Main MCU
16	MD	I	MIC Down control
17	MU	I	MIC UP control
18	GND	-	GND
19	NC	-	No connection
20	5C	I	5V

DISPLAY (MULTI/CH) UNIT (X54-3700-00 B/6)

Pin No.	Name	I/O	Function
CN965 (to Display unit A/6 CN104)			
1	MLED	I	Multi encoder LED (D961)
2	33C	I	3.3V (DC/DC)
3	MULB	O	Multi encoder pulse B
4	MULC	-	GND
5	MULA	O	Multi encoder pulse A

DISPLAY (VR) UNIT (X54-3700-00 C/6)

Pin No.	Name	I/O	Function
CN953 (to Display unit A/6 CN105)			
1	LB	O	Low cut encoder pulse B
2	GND	-	GND
3	LA	O	Low cut encoder pulse A
4	HB	O	Hi cut encoder pulse B
5	HA	O	Hi cut encoder pulse A
6	33C	I	3.3V (DC/DC)
7	NVOL	O	Notch volume voltage
8	SVOL	O	SQL volume voltage

DISPLAY (AF/RF) UNIT (X54-3700-00 D/6)

Pin No.	Name	I/O	Function
CN966 (to Display unit A/6 CN106)			
1	33C	I	3.3V (DC/DC)
2	AFVOL	O	AF volume voltage
3	RFVOL	O	RF volume voltage
4	NC	-	No connection
5	GND	-	GND

DISPLAY (MIC) UNIT (X54-3700-00 E/6)

Pin No.	Name	I/O	Function
CN951 (to Control unit A/3 CN64)			
1	MIC	O	MIC signal
2	MSG	-	MIC GND
3	MCG	-	GND
4	MU	O	MIC UP control
5	MD	O	MIC Down control
6	SS	O	MIC standby (PTT) control
7	8A	I	8V
J950 (MIC)			
1	MIC	I	MIC signal input
2	SS	I	MIC standby (PTT) control
3	MD	I	MIC Down control
4	MU	I	MIC UP control
5	8A	O	8V

TERMINAL FUNCTION

Pin No.	Name	I/O	Function
6	NC	-	No connection
7	MSG	-	MIC GND
8	MCG	-	GND

DISPLAY (PHONE) UNIT (X54-3700-00 F/6)

Pin No.	Name	I/O	Function
CN964 (to TX-RX unit A/2 CN4)			
1	PH1	I	AF input from phone jack
2	PHG	-	GND for phone jack
3	PH2	O	AF output to phone jack
4	PHDET	O	Phone jack detection signal
J951 (PHONES)			
1	PHG	-	GND for phone jack
2	PH1_R	O	AF output to phone jack
3	PH1_R	O	AF output to phone jack
4	PH1	O	AF output to external speaker
5	PH2	I	AF input to external speaker
6	NC	-	No connection
7	NC	-	No connection
8	PHG	-	GND for phone jack
9	PHDET	I	Phone jack detection signal

TX-RX UNIT (X57-785X-XX A/2)

Pin No.	Name	I/O	Function
CN1 (to Control unit A/3 CN2)			
1	14S	I	Switched 14V
2	GND	-	GND
3	8A	I	8V (DC/DC)
CN2 (to Control unit A/3 CN302)			
1	ANI	O	Packet data output
2	ANO	I	Packet data input
3	GND	-	Analog GND
4	PKSR	O	PTT output for data communication L: PTT ON
5	PKP	I	Invert PKS control H: PTT ON
6	SQC	I	SQL control voltage input H: SQL open
7	RTK	O	RTTY key signal
8	SS	O	Standby switch L: TX
9	KEY	O	KEY down signal L: KEY down
10	DOT	O	Electronic keyer dot signal L: KEY dot
11	DASH	O	Electronic keyer dash signal L: KEY dash
12	KYS	O	KEY jack judgement signal H: Plugged
13	AGCV	I	AGC control voltage
14	FSM	O	FM S-meter voltage
15	FSQL	O	FM squelch voltage
16	PHDET	O	Phone jack detection signal H: No phone jack
17	AD1	O	No connection (Reserved)
18	CLK1	I	Serial clock
19	DATA	I	Serial data
20	IEN1	I	IC14, IC15 enable
21	IEN2	I	IC11, IC12 enable
22	IEN3	I	IC 13 enable
23	CKY	I	CKY mute signal H: Mute
24	ALM	O	ALC meter voltage
25	TCS	I	VSF/VSR detector time constant control
26	VSRM	O	VSR meter voltage
27	VSFM	O	VSF meter voltage
28	TXC	I	TX ON/OFF H: TXB ON
29	IBK	I	IF blanking H: Mute
30	IDT	O	Power current voltage
31	33C	I	3.3V (DC/DC)
32	NC	-	No connection
33	DGND	-	Digital GND
34	GND	-	GND
35	NC	-	No connection
36	5A	I	Non switched 5V
CN3 (to Control unit A/3 CN65)			
1	AF	I	Audio signal input
2	AFG	-	Audio GND
CN4 (to Display (PHONE) unit F/6 CN964)			
1	PH1	O	AF output for phone jack
2	PHG	-	GND for phone jack
3	PH2	I	AF input for phone jack
4	PHDET	I	Phone jack detector signal H: No phone jack
CN5 (to Final unit A/2 CN9)			
1	5A	O	Non switched 5V
2	NC	-	No connection
3	GND	-	GND
4	SPG	-	Speaker GND
5	VSF	I	Forward wave power detection voltage
6	SP	O	Speaker output
7	VSR	I	Reflected wave power detection voltage
8	33C	O	3.3V (DC/DC)
9	ID	I	Power current signal
10	TXB	O	TX 8V
CN100 (to Final (Relay) unit B/2 CN51)			
1	RAT	I	RAT input (Coaxial)
CN200 (to Control (LO) unit B/3 CN654)			
1	LO1	I	1st local signal (Coaxial)

TERMINAL FUNCTION

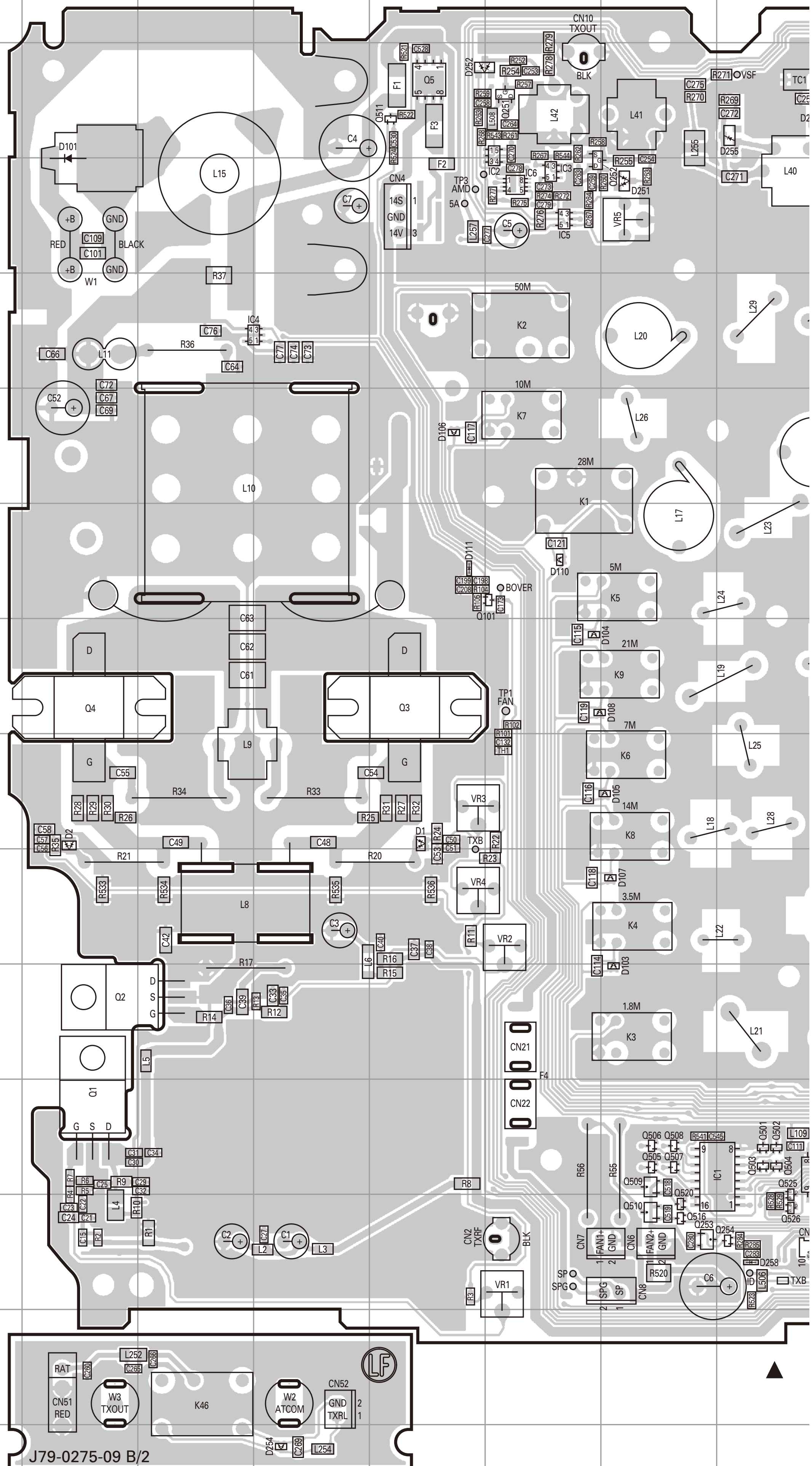
Pin No.	Name	I/O	Function
CN300 (to Control (LO) unit B/3 CN508)			
1	LO2	I	2nd local signal (Coaxial)
CN400 (to Control (LO) unit B/3 CN601)			
1	LO3	I	3rd local signal (Coaxial)
CN600 (to Control unit A/3 CN61)			
1	RIF	O	RX IF output
2	GND	-	GND
CN650 (to TX-RX (NB) unit B/2 CN663)			
1	14S	O	Switched 14V
2	NC	-	No connection
3	–6V	I	–6V (DC/DC)
4	DCGND	-	DC/DC GND
5	GND	-	GND
6	IBK	O	IF blanking H: Mute
7	1STIF	O	1st IF switch signal H: 73.095MHz
8	NBL	O	Noise Blanker level
9	8A	O	8V (DC/DC)
10	BLNK	I	IF mute signal H: Mute
CN674 (to Final unit A/2 CN667)			
1	NBIF	O	NB IF output (Coaxial)
CN700 (to Control unit A/3 CN62)			
1	TIF	I	TX IF input
2	GND	-	GND
CN800 (to Final unit A/2 CN2)			
1	TXRF	I	TX RF output (Coaxial)
J1 (EXT.SP)			
4	GND	-	GND
5	PH2	O	AF output for external speaker
6	SP	I	Internal speaker AF signal
J2 (ACC2)			
1	NC	-	No connection
2	RTTY	I	RTTY key input
3	ANO	O	Packet RX signal output
4	GND	-	GND
5	PSQ	O	Squelch control signal SQL tight: Hi-Z
6	NC	-	No connection
7	NC	-	No connection
8	GND	-	GND
9	PKS	I	PTT line control for data communication H: PTT ON
10	NC	-	No connection
11	ANI	I	Packet data input
12	GND	-	GND
13	SS	I	Standby switch L: TX
J3 (REMOTE)			
1	SPO	O	Speaker output
2	COM	-	Common terminal (relay)
3	SS	I	Standby switch L: TX
4	MKE	-	Make terminal (relay)
5	BRK	-	Break terminal (relay)
6	ALC	I	ALC voltage
7	TX14V	O	TX 14V
J4 (KEY)			
1	GND	-	GND
2	KEY	I	KEY down signal input
3	GND	-	GND
10	NC	-	No connection
11	KYS	I	KEY jack judgement signal
J5 (PADDLE)			
1	GND	-	GND
2	DOT	I	Dot signal input
3	DASH	I	Dash signal input
4	KYS	I	KEY jack judgement signal
5	KYS	I	KEY jack judgement signal
6	NC	-	No connection
7	NC	-	No connection
8	NC	-	No connection
9	NC	-	No connection
J100 (RX ANT)			
1	RXANT	I	RX antenna input (Coaxial)
J800 (DRV)			
1	DRV	O	Drive output (Coaxial)

TX-RX (NB) UNIT (X57-785X-XX B/2)

Pin No.	Name	I/O	Function
CN663 (to TX-RX unit A/2 CN650)			
1	14S	I	Switched 14V
2	NC	-	No connection
3	–6V	O	–6V (DC/DC)
4	DCGND	-	DC/DC GND
5	GND	-	GND
6	IBK	I	IF blanking H: Mute
7	1STIF	I	1st IF switch signal H: 73.095MHz
8	NBL	I	Noise blanker level
9	8A	I	8V (DC/DC)
10	BLNK	O	IF mute signal H: Mute
CN667 (to TX-RX unit A/2 CN674)			
1	NBIF	I	NB IF input (Coaxial)

TS-590S **PC BOARD**

FINAL UNIT
(X45-391X-XX)
0-11: K 2-71: E
Component side view
(J79-0275-09)



Component side

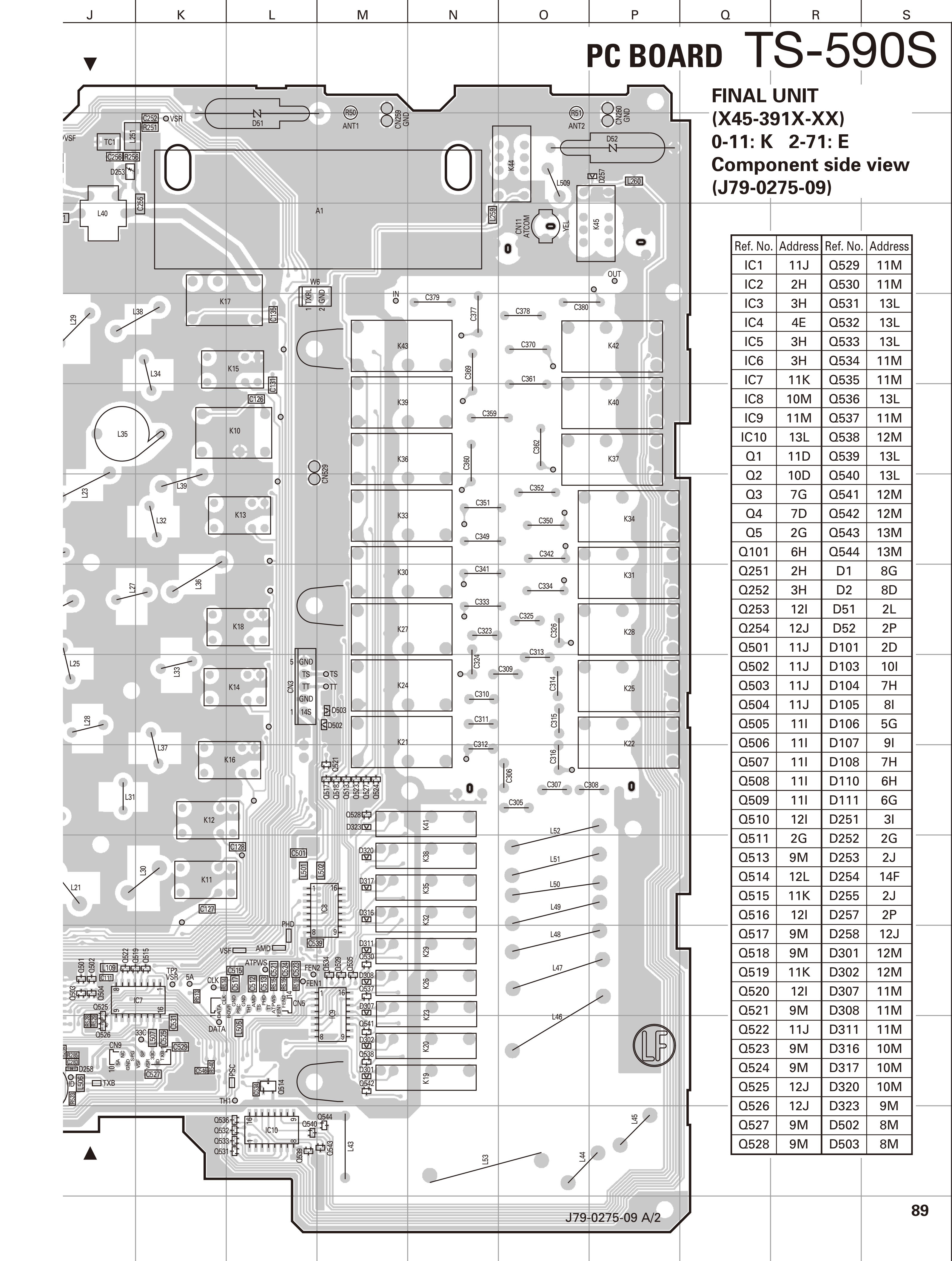
Layer 1

Layer 2

Foil side

PC BOARD TS-590S

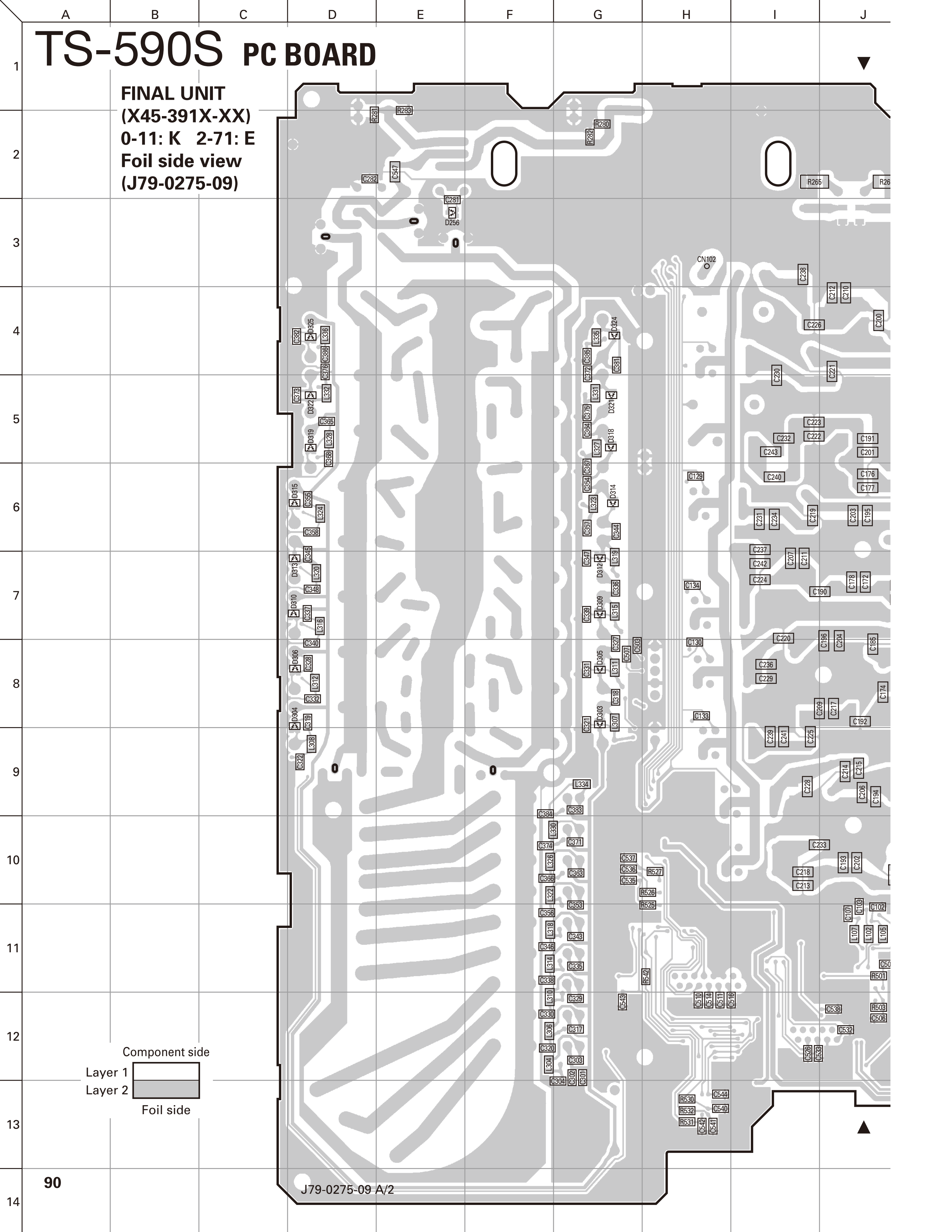
FINAL UNIT (X45-391X-XX) 0-11: K 2-71: E Component side view (J79-0275-09)



Ref. No.	Address	Ref. No.	Address
IC1	11J	Q529	11M
IC2	2H	Q530	11M
IC3	3H	Q531	13L
IC4	4E	Q532	13L
IC5	3H	Q533	13L
IC6	3H	Q534	11M
IC7	11K	Q535	11M
IC8	10M	Q536	13L
IC9	11M	Q537	11M
IC10	13L	Q538	12M
Q1	11D	Q539	13L
Q2	10D	Q540	13L
Q3	7G	Q541	12M
Q4	7D	Q542	12M
Q5	2G	Q543	13M
Q101	6H	Q544	13M
Q251	2H	D1	8G
Q252	3H	D2	8D
Q253	12I	D51	2L
Q254	12J	D52	2P
Q501	11J	D101	2D
Q502	11J	D103	10I
Q503	11J	D104	7H
Q504	11J	D105	8I
Q505	11I	D106	5G
Q506	11I	D107	9I
Q507	11I	D108	7H
Q508	11I	D110	6H
Q509	11I	D111	6G
Q510	12I	D251	3I
Q511	2G	D252	2G
Q513	9M	D253	2J
Q514	12L	D254	14F
Q515	11K	D255	2J
Q516	12I	D257	2P
Q517	9M	D258	12J
Q518	9M	D301	12M
Q519	11K	D302	12M
Q520	12I	D307	11M
Q521	9M	D308	11M
Q522	11J	D311	11M
Q523	9M	D316	10M
Q524	9M	D317	10M
Q525	12J	D320	10M
Q526	12J	D323	9M
Q527	9M	D502	8M
Q528	9M	D503	8M

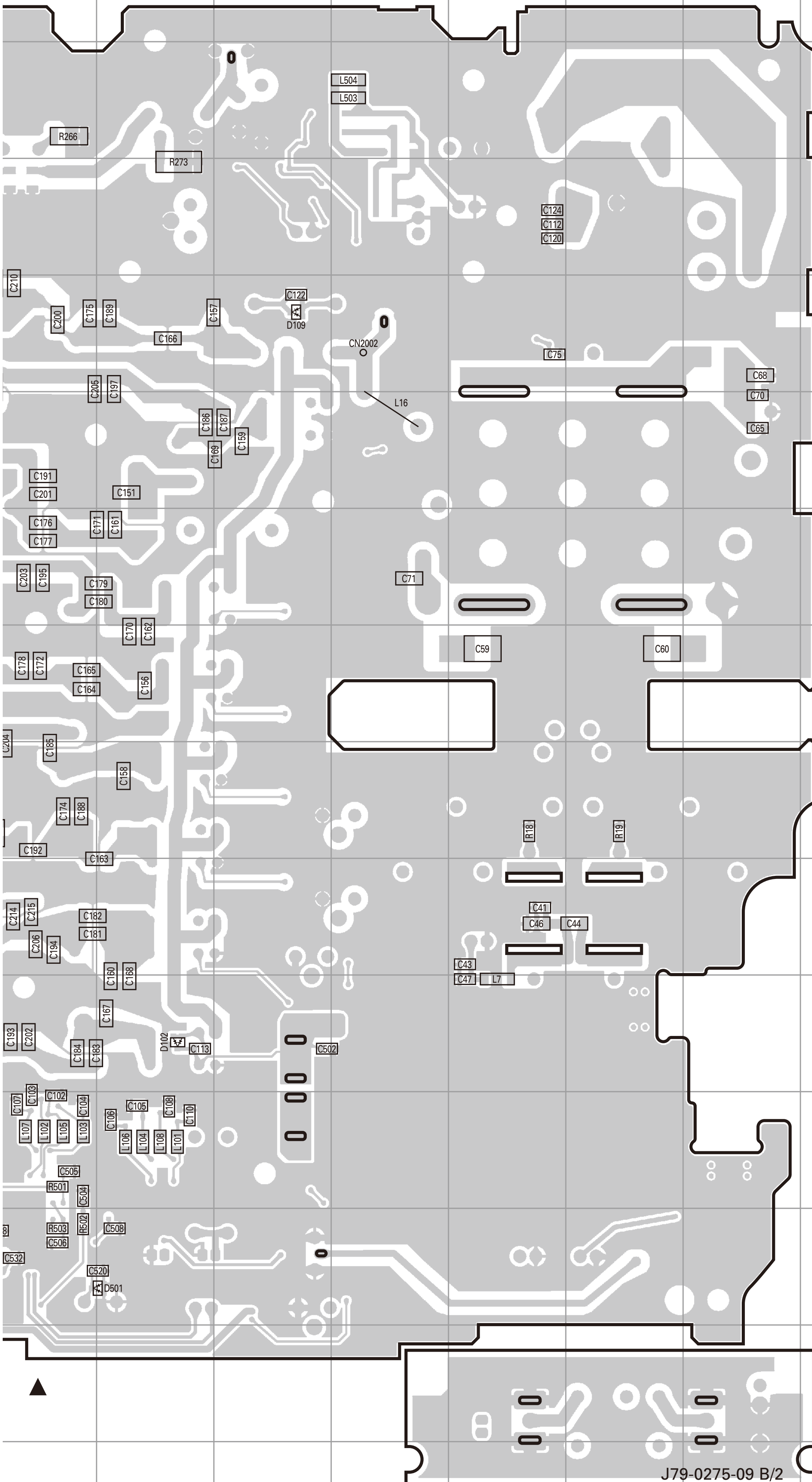
TS-590S PC BOARD

FINAL UNIT
(X45-391X-XX)
0-11: K 2-71: E
Foil side view
(J79-0275-09)



PC BOARD TS-590S

FINAL UNIT
(X45-391X-XX)
0-11: K 2-71: E
Foil side view
(J79-0275-09)



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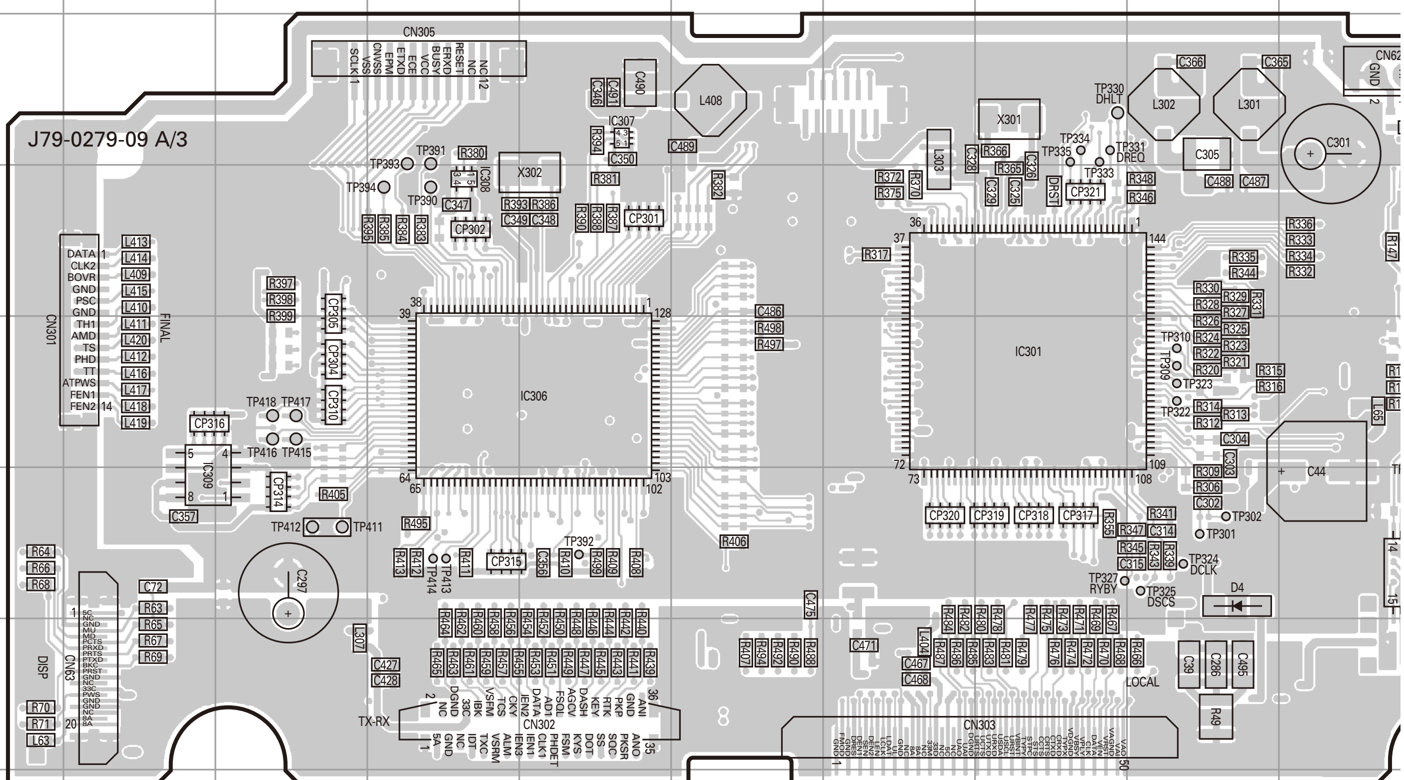
D102	10K
D109	4L
D256	3E
D303	8G
D304	8D
D305	8G
D306	8D
D309	7G
D310	7D
D312	7G
D313	7D
D314	6G
D315	6D
D318	5G
D319	5D
D321	5G
D322	5D
D324	4G
D325	4D
D501	12K

TS-590S PC BOARD

CONTROL UNIT (X53-446X-XX) (A/3) 0-11: K 2-71: E
Component side view (J79-0279-09 A/3)



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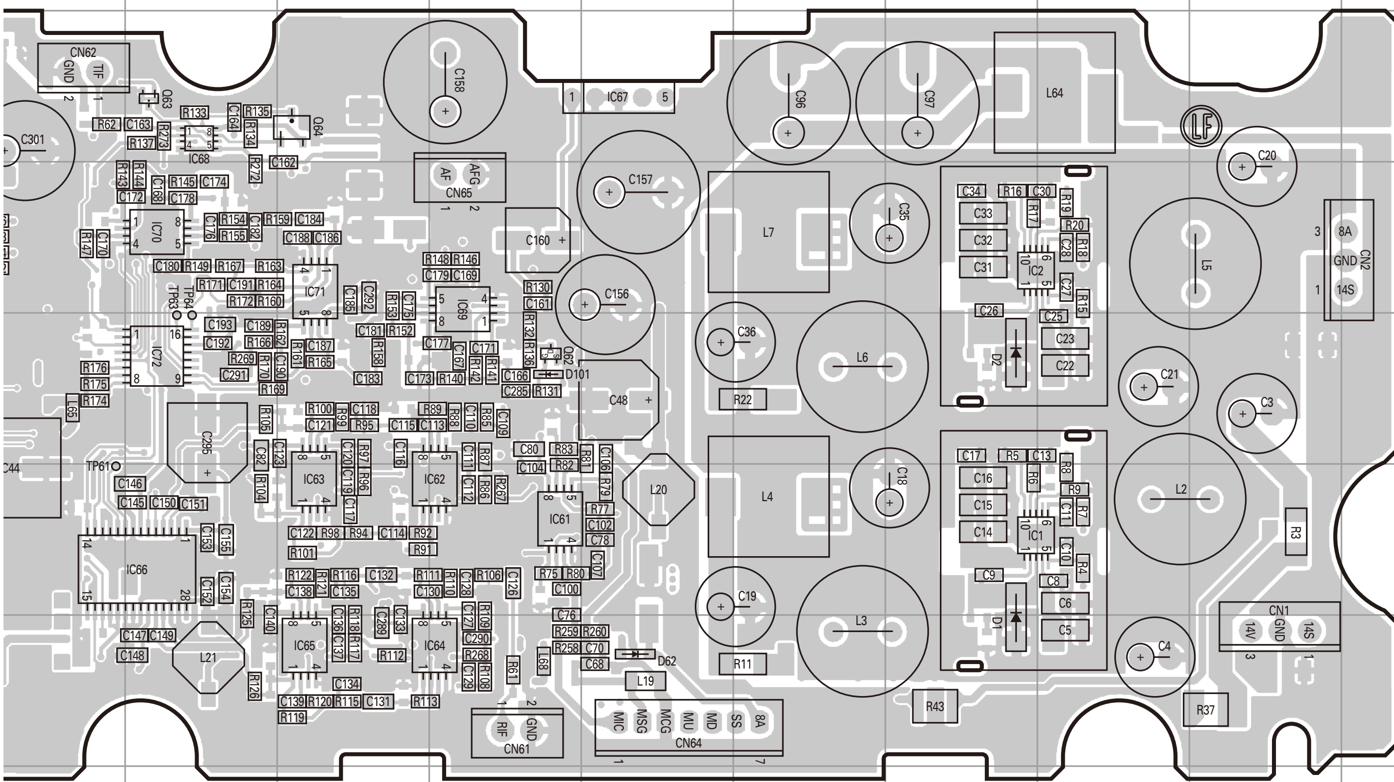
IC1	6P	IC69	4M	Q63	3K
IC2	4P	IC70	4K	Q64	3L
IC61	6M	IC71	4L	D1	7P
IC62	6M	IC72	5K	D2	5P
IC63	6L	IC301	5H	D4	6I
IC64	7M	IC306	5E	D62	7N
IC65	7L	IC307	3E	D101	5M
IC66	6K	IC308	4D		
IC67	3N	IC309	6B		
IC68	3K	Q62	5M		

PC BOARD TS-590S

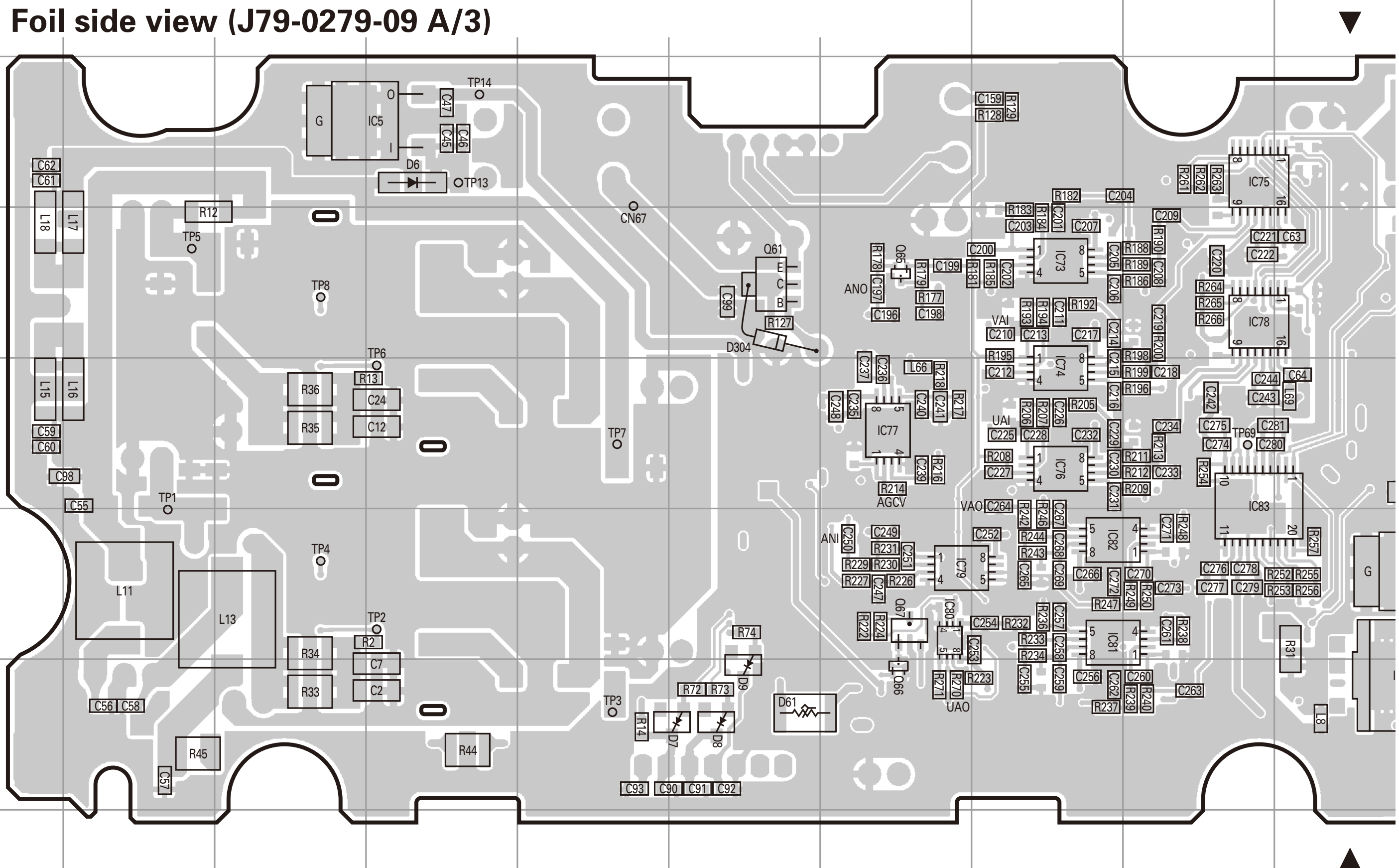
CONTROL UNIT (X53-446X-XX) (A/3) 0-11: K 2-71: E
Component side view (J79-0279-09 A/3)



	Component side
Layer 1	
Layer 2	
Layer 3	
Layer 4	
	Foil side

TS-590S PC BOARD

CONTROL UNIT (X53-446X-XX) (A/3) 0-11: K 2-71: E
Foil side view (J79-0279-09 A/3)



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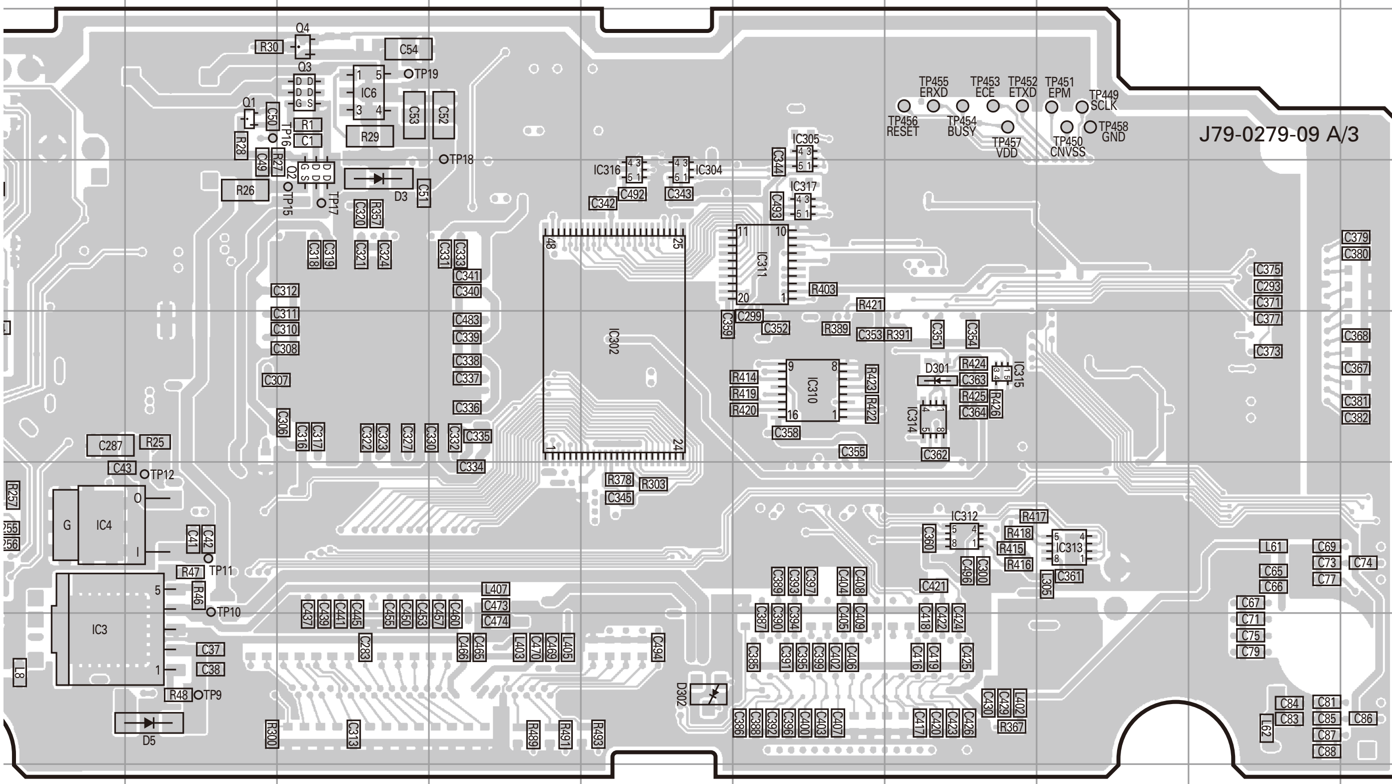
IC3	7J	IC80	6G	IC314	5P	Q67	6G
IC4	6J	IC81	6H	IC315	5P	D3	4L
IC5	3D	IC82	6H	IC316	4N	D5	7K
IC6	3L	IC83	5I	IC317	4O	D6	3D
IC73	4H	IC302	5N	Q1	3K	D7	7F
IC74	5H	IC304	4N	Q2	4L	D8	7F
IC75	3I	IC305	3O	Q3	3L	D9	7F
IC76	5H	IC310	5O	Q4	3L	D61	7F
IC77	5G	IC311	4O	Q61	4F	D301	5P
IC78	4I	IC312	6P	Q65	4G	D302	7N
IC79	6G	IC313	6Q	Q66	7G	D304	4F

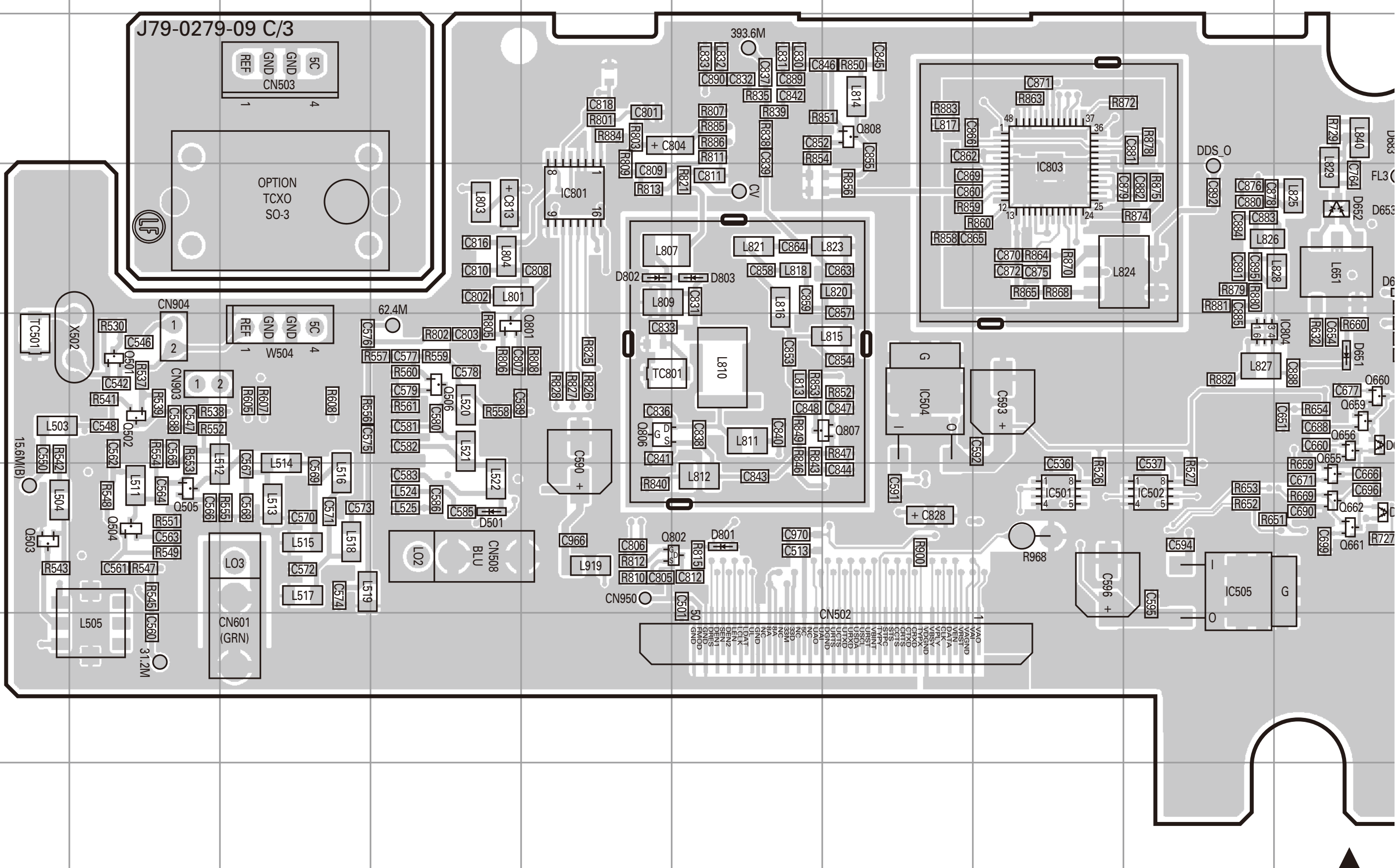
CONTROL UNIT (X53-446X-XX) (A/3) 0-11: K 2-71: E
Foil side view (J79-0279-09 A/3)



Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

TS-590S PC BOARD

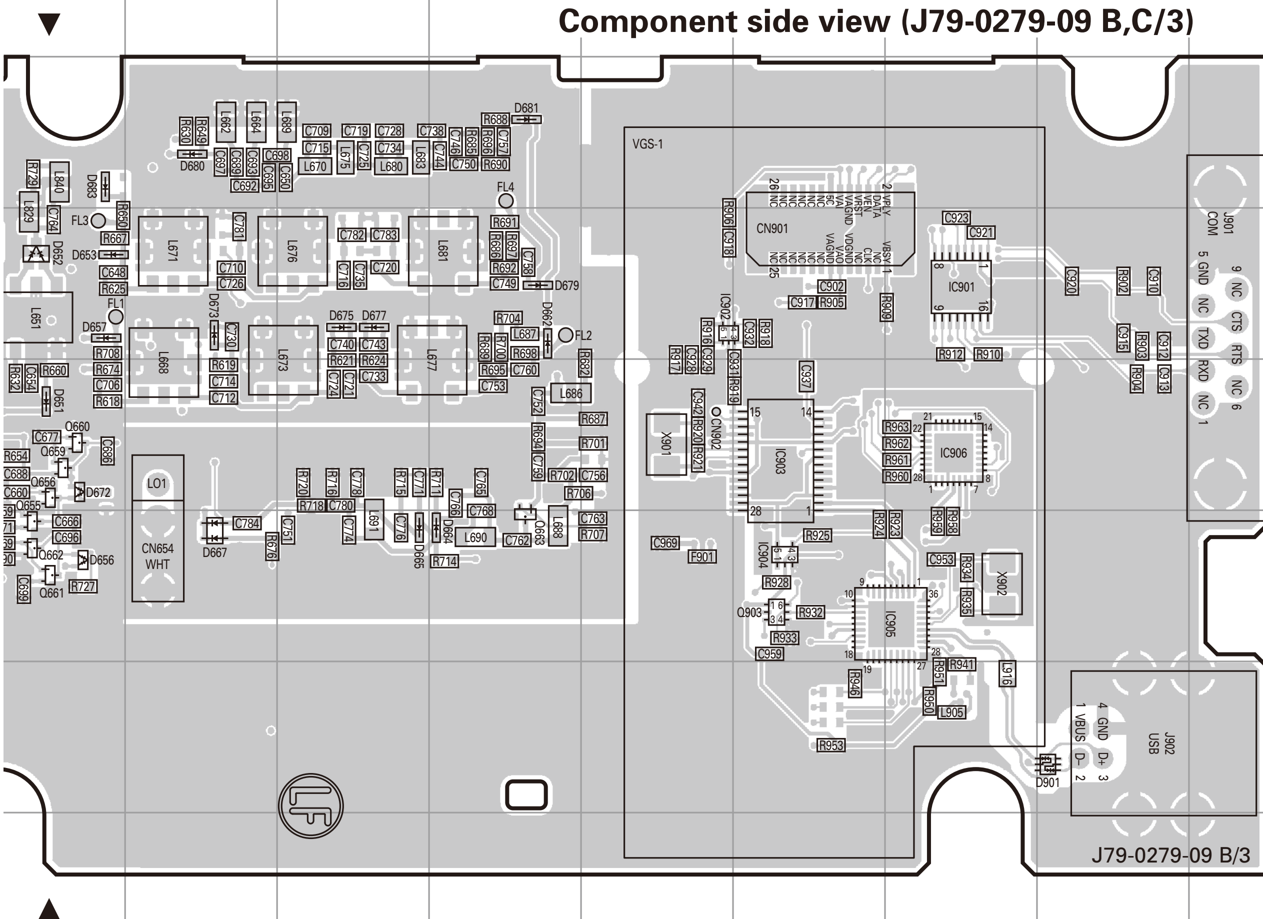
CONTROL UNIT (X53-446X-XX) (B,C/3) 0-11: K 2-71: E
Component side view (J79-0279-09 B,C/3)

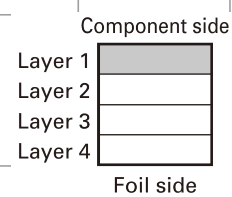


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC501	6H	IC905	6P	Q660	5J	D652	4J	D677	4L
IC502	6I	IC906	5P	Q661	6J	D653	4J	D679	4M
IC504	5G	Q501	5B	Q662	6J	D656	5J	D680	3K
IC505	6I	Q502	5B	Q663	6M	D657	4J	D681	3M
IC801	4E	Q503	6A	Q801	5D	D662	4M	D683	3J
IC803	4H	Q504	6B	Q802	6F	D664	6M	D801	6F
IC804	5I	Q505	6B	Q806	5E	D665	6L	D802	4E
IC901	4P	Q506	5D	Q807	5G	D667	6K	D803	4F
IC902	4N	Q655	6J	Q808	3G	D672	5J	D901	7Q
IC903	5O	Q656	5J	D501	6D	D673	4K		
IC904	6O	Q659	5J	D651	5J	D675	4L		

PC BOARD TS-590S

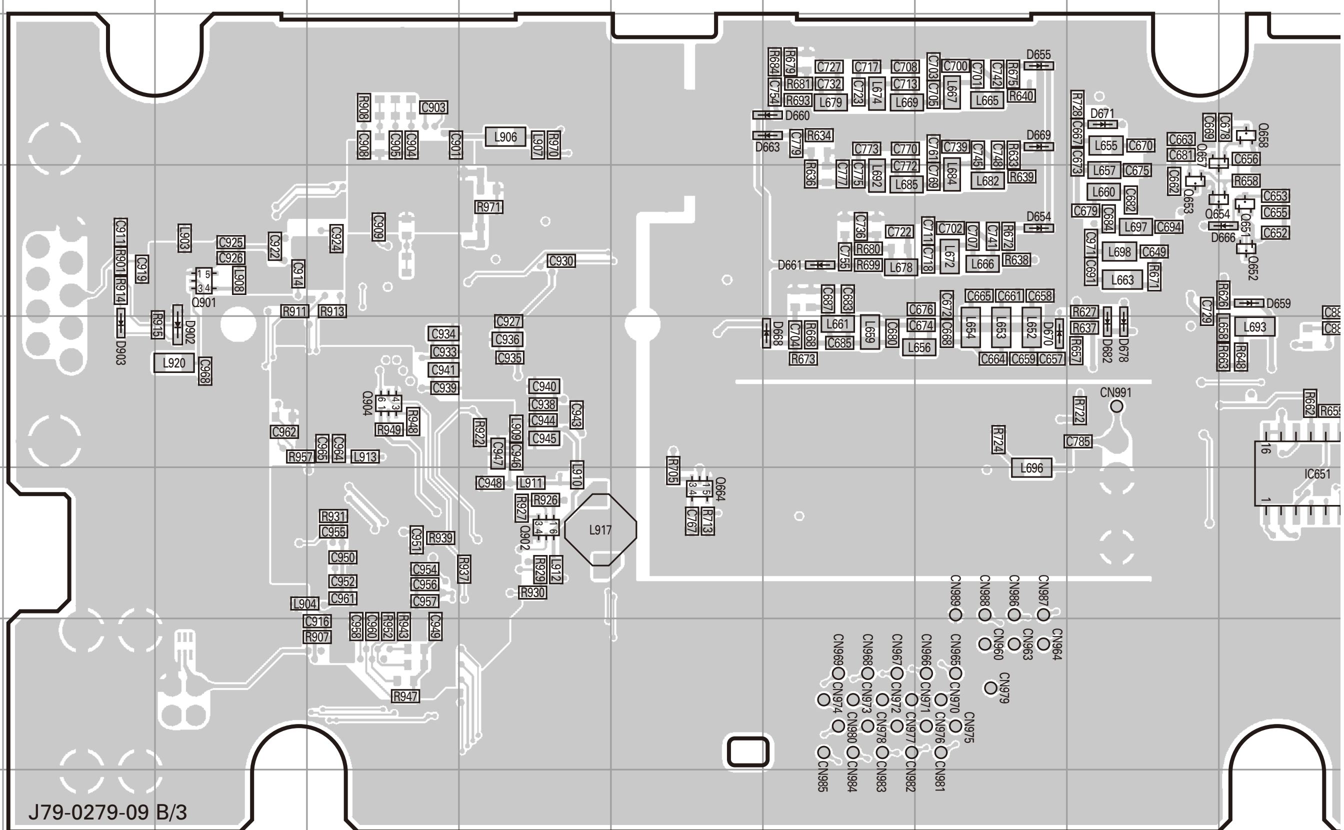
CONTROL UNIT (X53-446X-XX) (B,C/3) 0-11: K 2-71: E
Component side view (J79-0279-09 B,C/3)





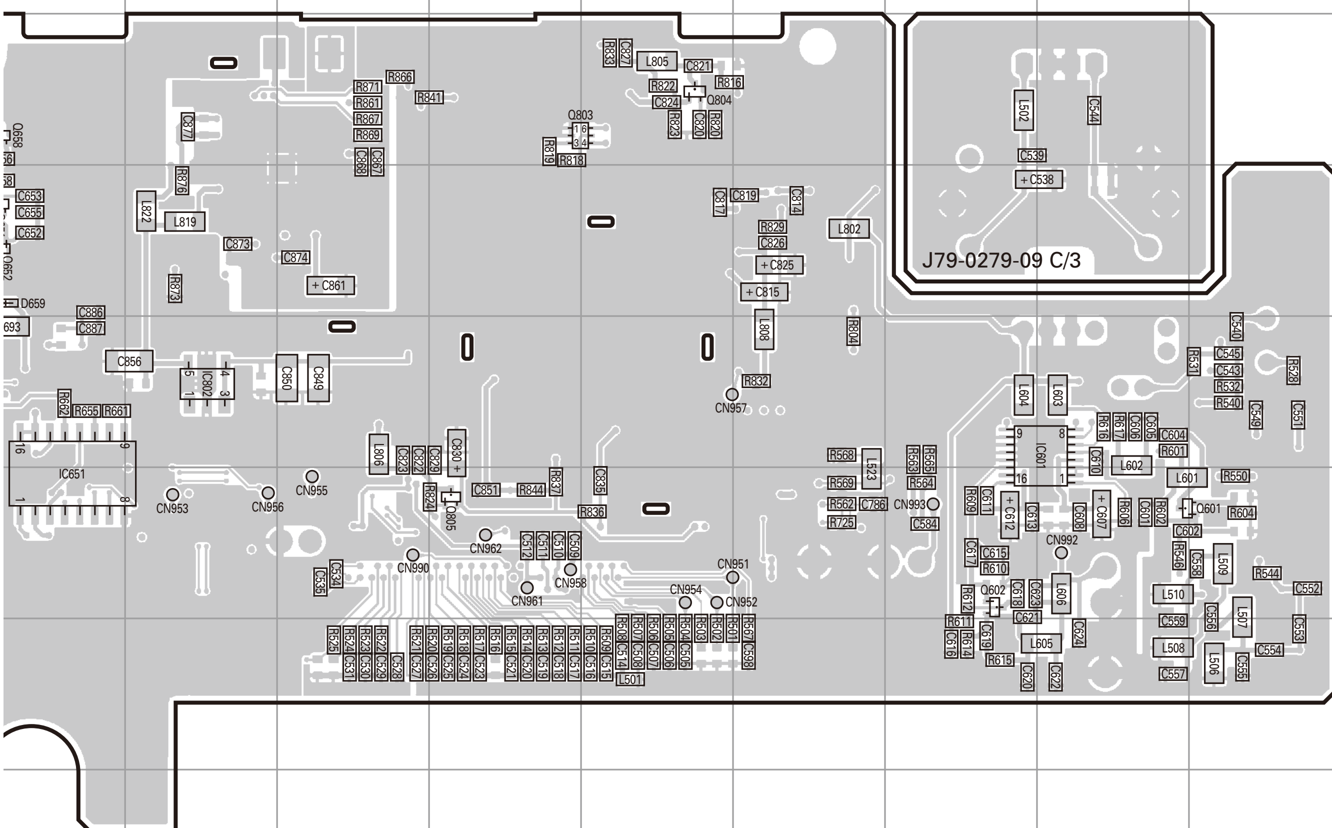
TS-590S PC BOARD

CONTROL UNIT (X53-446X-XX) (B,C/3) 0-11: K 2-71: E
Foil side view (J79-0279-09 B,C/3)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC601	5Q	Q664	6F	D661	4G
IC651	6J	Q803	3M	D663	3G
IC802	5K	Q804	3N	D666	4J
Q601	6Q	Q805	6M	D668	5G
Q602	6P	Q901	4C	D669	3H
Q651	4J	Q902	6E	D670	5H
Q652	4J	Q904	5D	D671	3I
Q653	4I	D654	4H	D678	5I
Q654	4I	D655	3H	D682	5I
Q657	3I	D659	4J	D902	5C
Q658	3J	D660	3G	D903	5B

CONTROL UNIT (X53-446X-XX) (B,C/3) 0-11: K 2-71: E
Foil side view (J79-0279-09 B,C/3)



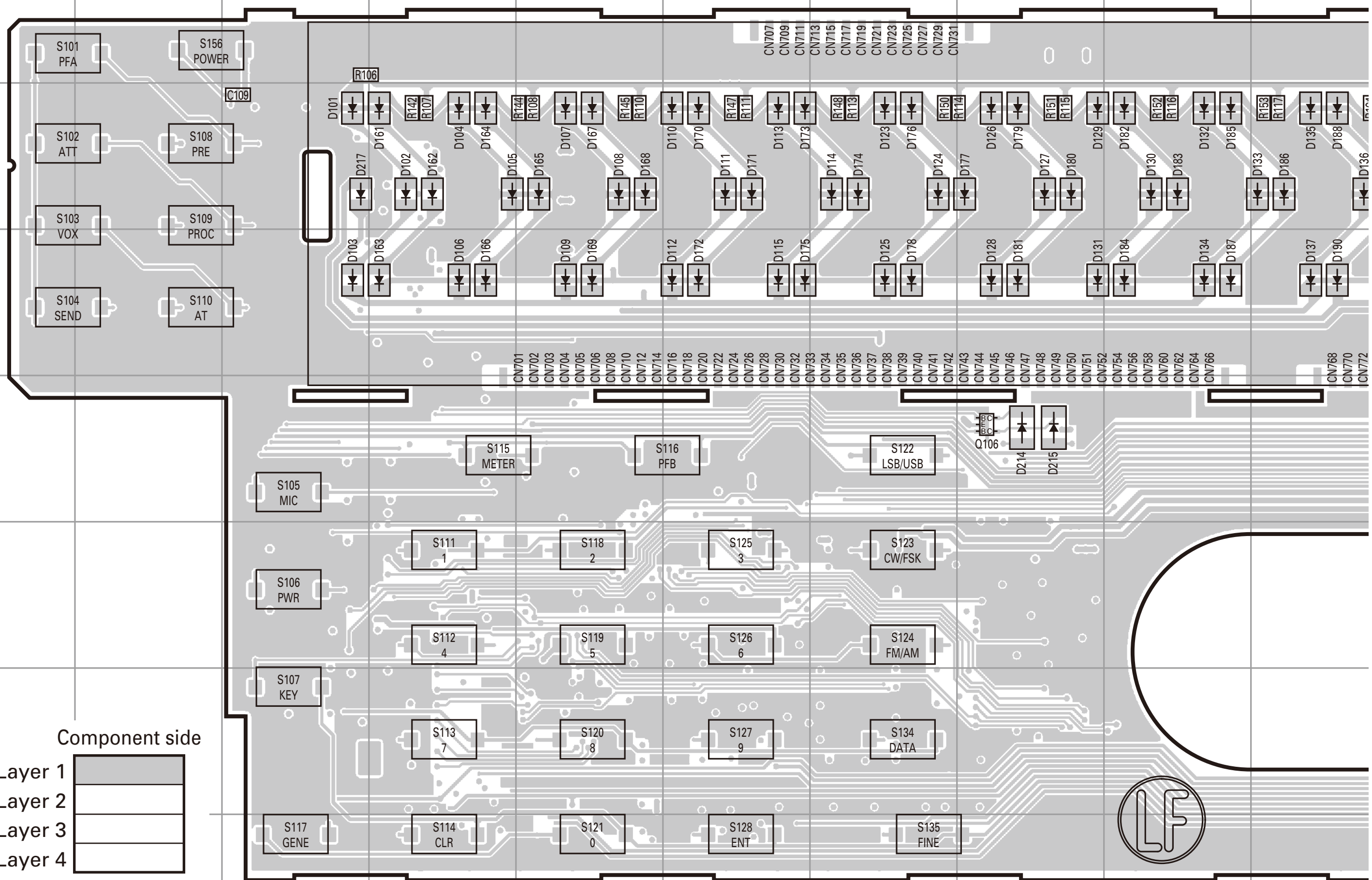
Component side

Layer 1	
Layer 2	
Layer 3	
Layer 4	

Foil side

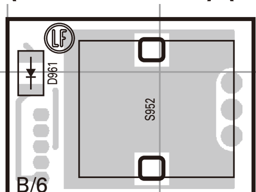
TS-590S PC BOARD

DISPLAY UNIT (X54-3700-00) (A/6): DISPLAY
Component side view (J79-0280-09 A/6)

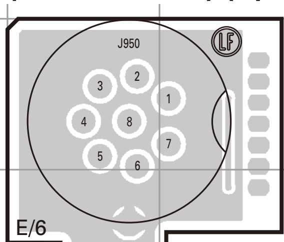


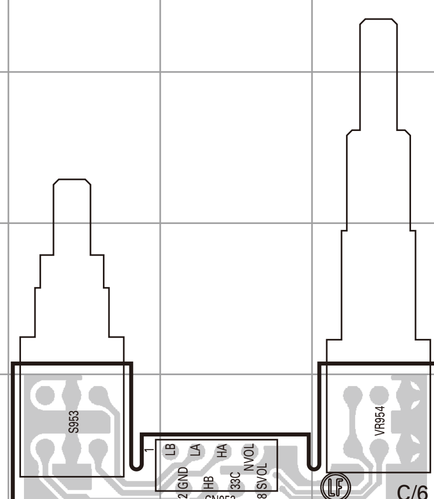
Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

DISPLAY UNIT (X54-3700-00) (B/6): MULCH/CH



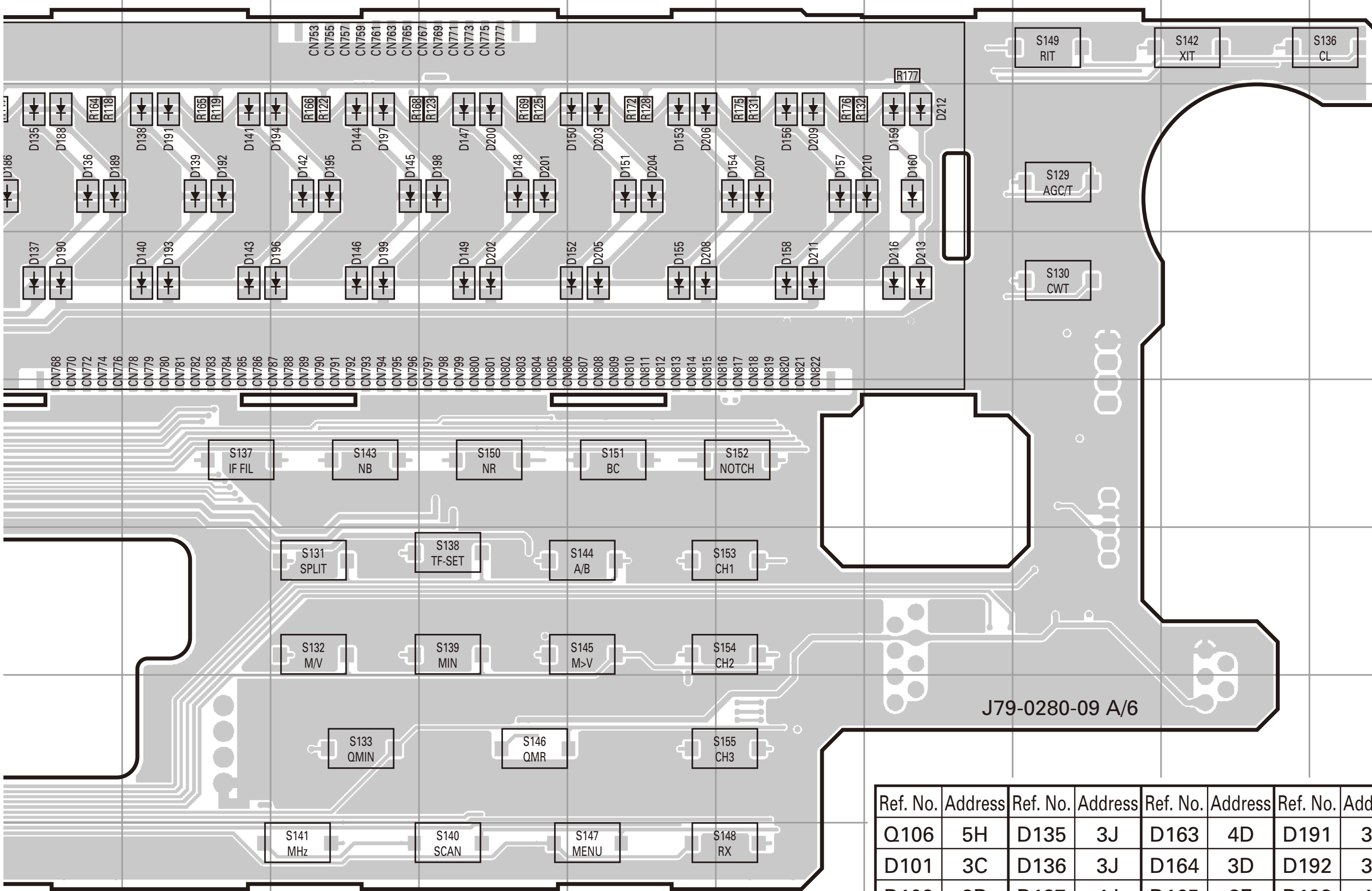
DISPLAY UNIT (X54-3700-00) (E/6): MIC



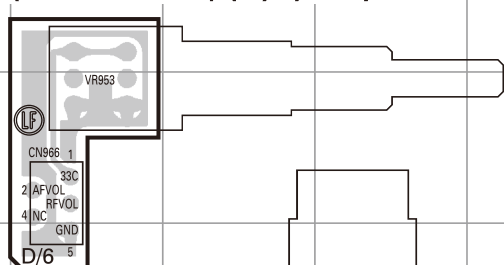


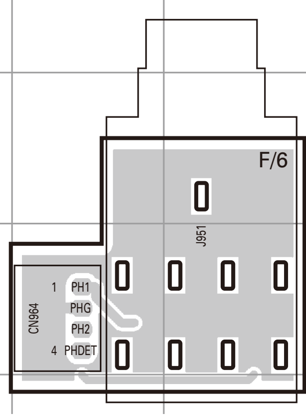
DISPLAY UNIT (X54-3700-00) (C/6) : HI/LO (SHIFT/WIDTH), NOTCH/SQL

DISPLAY UNIT (X54-3700-00) (A/6): DISPLAY
Component side view (J79-0280-09 A/6)



DISPLAY UNIT (X54-3700-00) (D/6): AF/RF



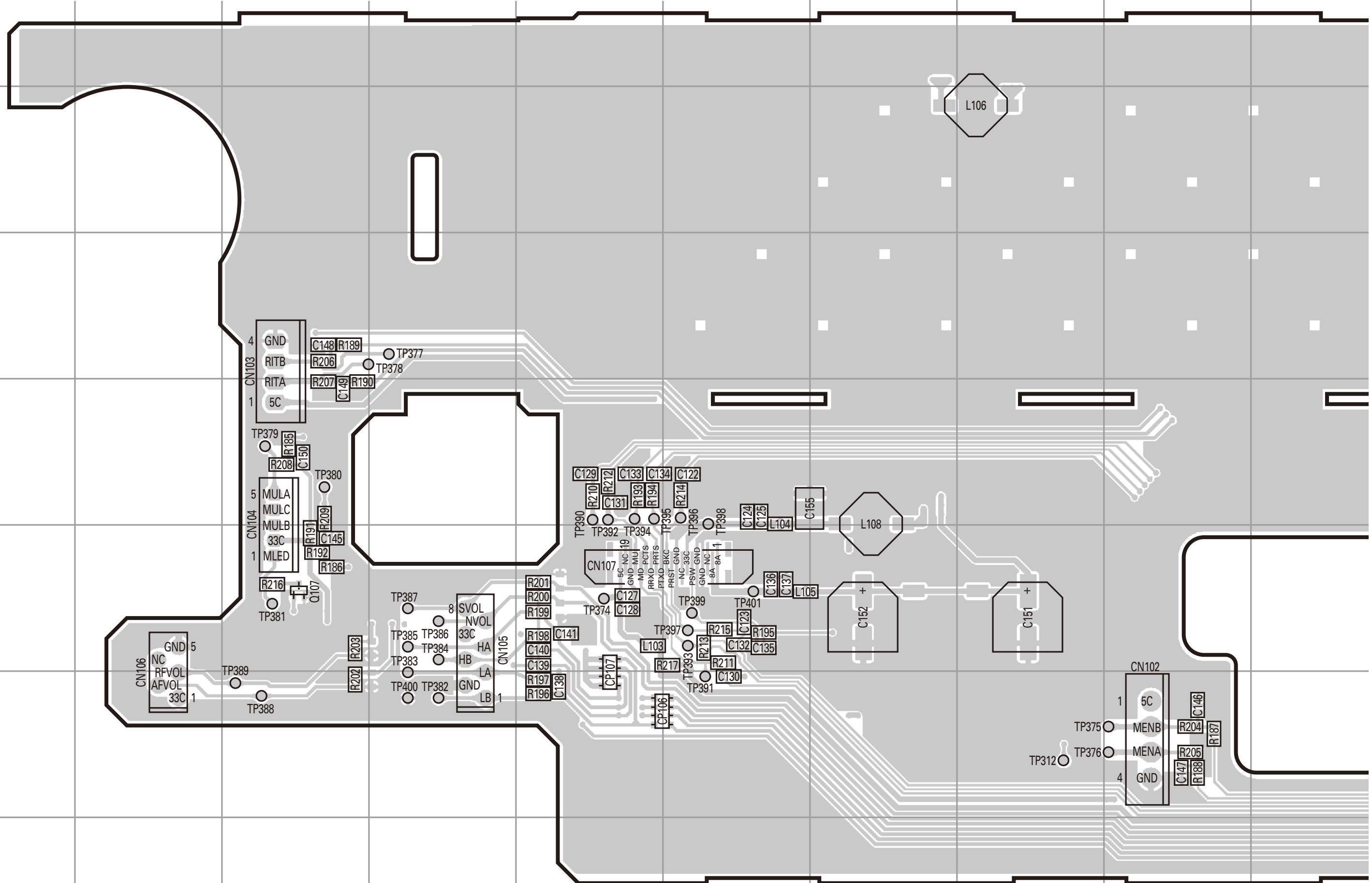


DISPLAY UNIT (X54-3700-00) (F/6): PHONE

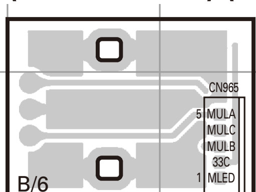
Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
Q106	5H	D135	3J	D163	4D	D191	3K
D101	3C	D136	3J	D164	3D	D192	3K
D102	3D	D137	4J	D165	3E	D193	4K
D103	4C	D138	3K	D166	4D	D194	3L
D104	3D	D139	3K	D167	3E	D195	3L
D105	3D	D140	4K	D168	3E	D196	4L
D106	4D	D141	3K	D169	4E	D197	3L
D107	3E	D142	3L	D170	3F	D198	3M
D108	3E	D143	4K	D171	3F	D199	4L
D109	4E	D144	3L	D172	4F	D200	3M
D110	3F	D145	3L	D173	3F	D201	3M
D111	3F	D146	4L	D174	3G	D202	4M
D112	4F	D147	3M	D175	4F	D203	3N
D113	3F	D148	3M	D176	3G	D204	3N
D114	3G	D149	4M	D177	3H	D205	4N
D115	4F	D150	3N	D178	4G	D206	3N
D123	3G	D151	3N	D179	3H	D207	3O
D124	3G	D152	4N	D180	3H	D208	4N
D125	4G	D153	3N	D181	4H	D209	3O
D126	3H	D154	3O	D182	3I	D210	3P
D127	3H	D155	4N	D183	3I	D211	4O
D128	4H	D156	3O	D184	4I	D212	3P
D129	3H	D157	3O	D185	3I	D213	4P
D130	3I	D158	4O	D186	3J	D214	5H
D131	4H	D159	3P	D187	4I	D215	5H
D132	3I	D160	3P	D188	3J	D216	4P
D133	3J	D161	3D	D189	3J	D217	3C
D134	4I	D162	3D	D190	4J	D961	10B

TS-590S PC BOARD

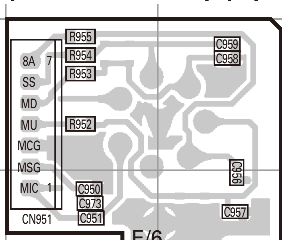
DISPLAY UNIT (X54-3700-00) (A/6): DISPLAY
Foil side view (J79-0280-09 A/6)

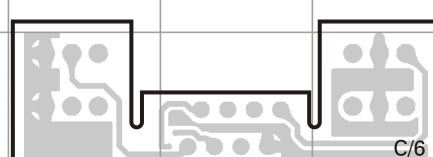


DISPLAY UNIT
(X54-3700-00) (B/6): MULCH/CH



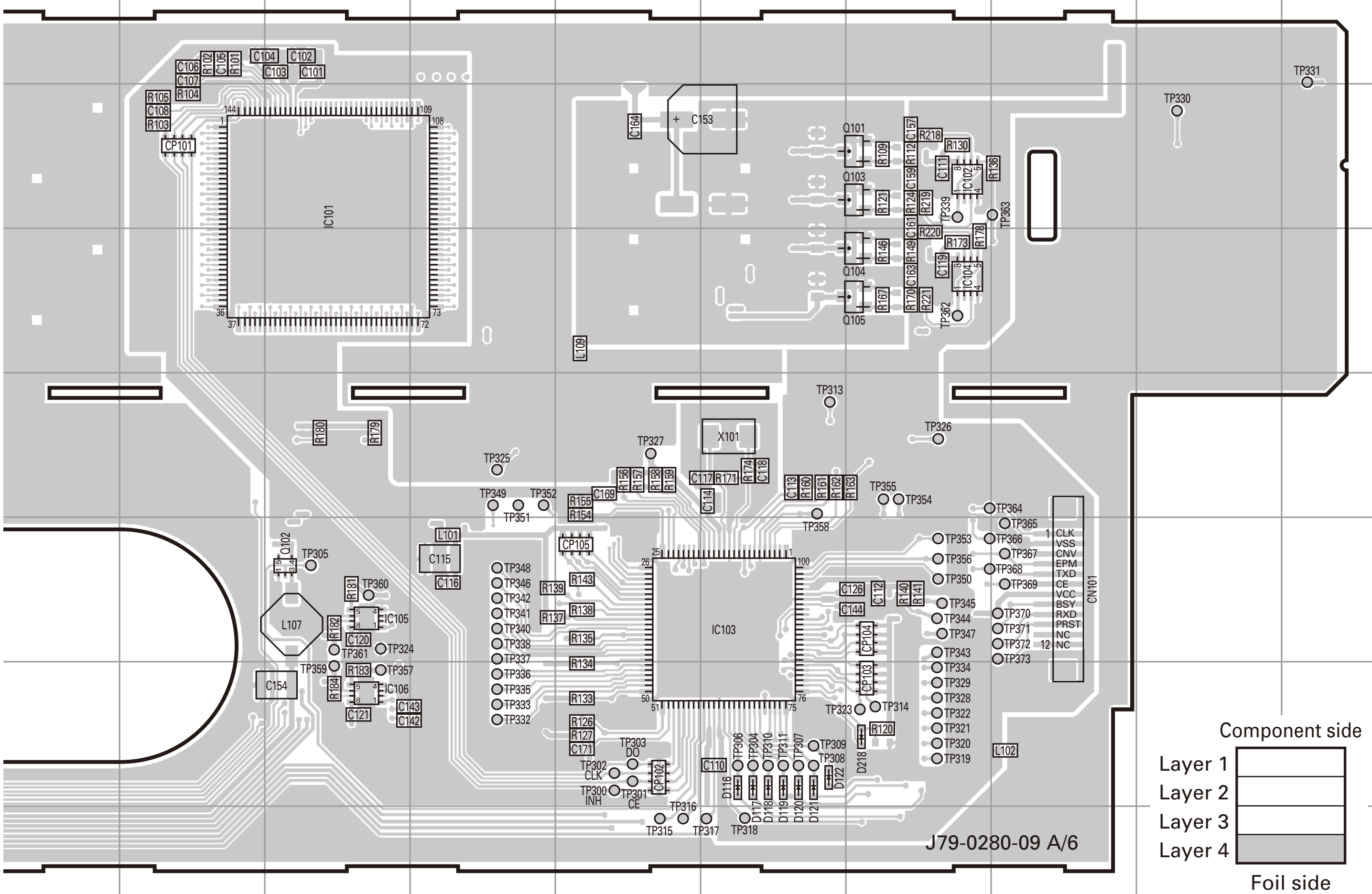
DISPLAY UNIT
(X54-3700-00) (E/6): MIC



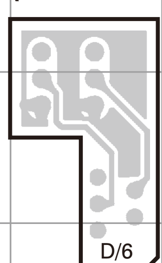


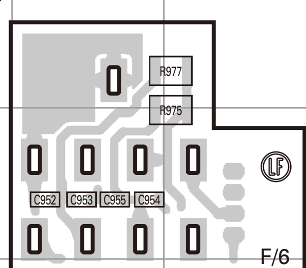
DISPLAY UNIT
(X54-3700-00) (C/6)
: HI/LO (SHIFT/WIDTH), NOTCH/SQL

DISPLAY UNIT (X54-3700-00) (A/6): DISPLAY
Foil side view (J79-0280-09 A/6)



DISPLAY UNIT
(X54-3700-00) (D/6): AF/RF



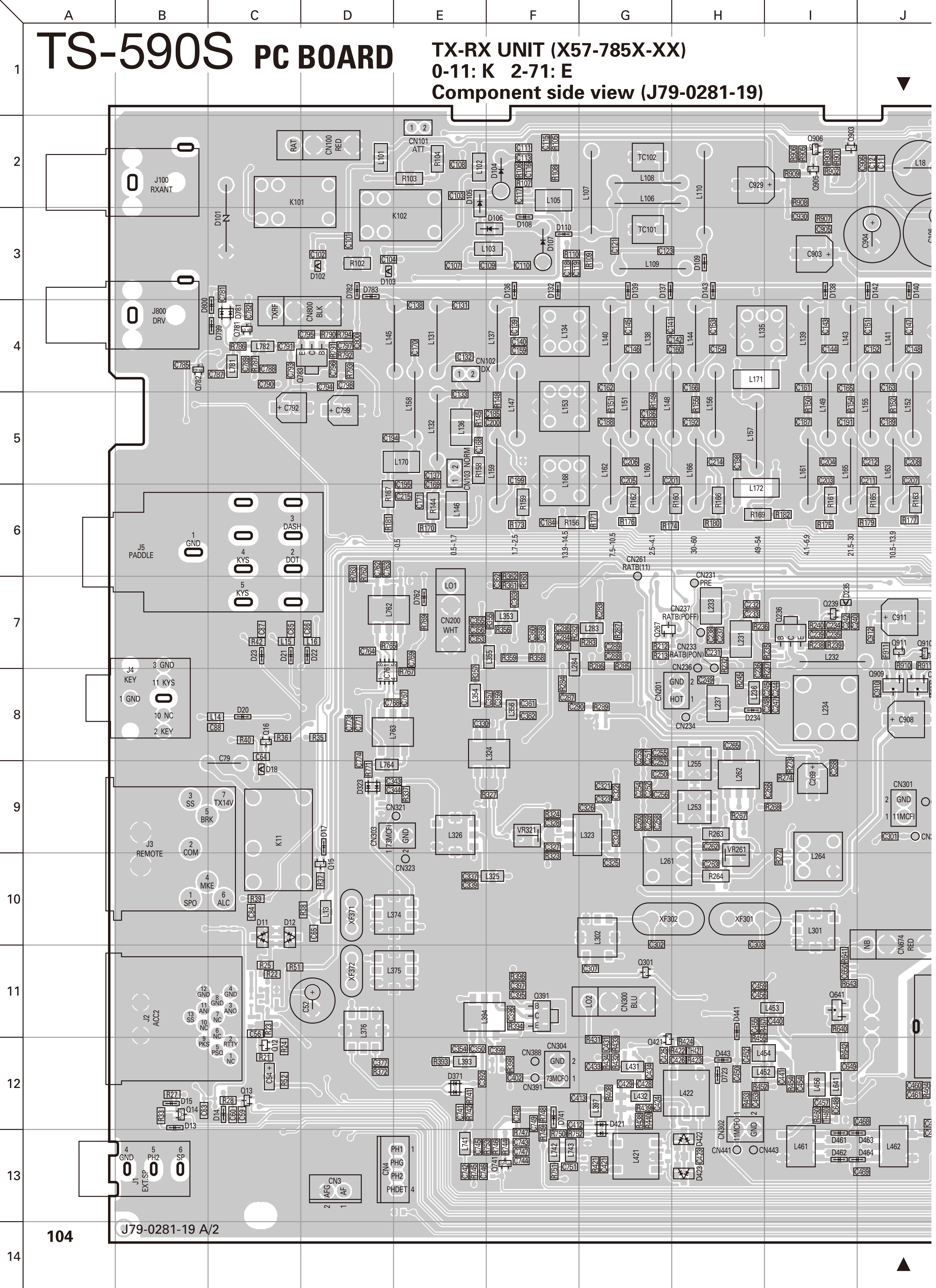


DISPLAY UNIT
(X54-3700-00) (F/6): PHONE

Ref. No.	Address	Ref. No.	Address
IC101	3L	Q105	4P
IC102	3P	Q107	6C
IC103	6O	D116	7O
IC104	4P	D117	7O
IC105	6L	D118	7O
IC106	7L	D119	7O
Q101	3P	D120	7O
Q102	6L	D121	7O
Q103	3P	D122	7O
Q104	4P	D218	7P

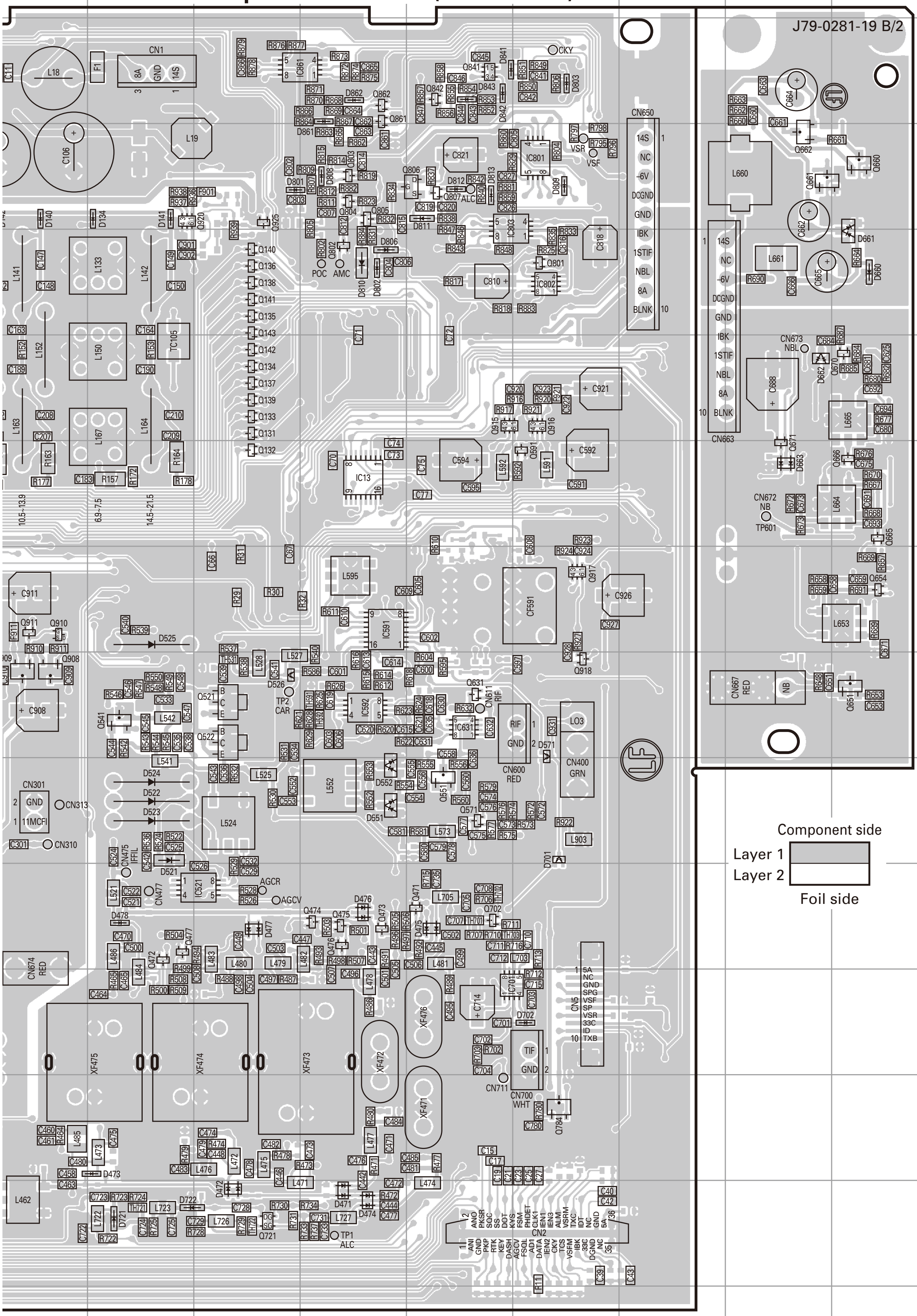
TS-590S PC BOARD

TX-RX UNIT (X57-785X-XX)
0-11: K 2-71: E
Component side view (J79-0281-19)



TX-RX UNIT (X57-785X-XX)
0-11: K 2-71: E
Component side view (J79-0281-19)

PC BOARD TS-590S



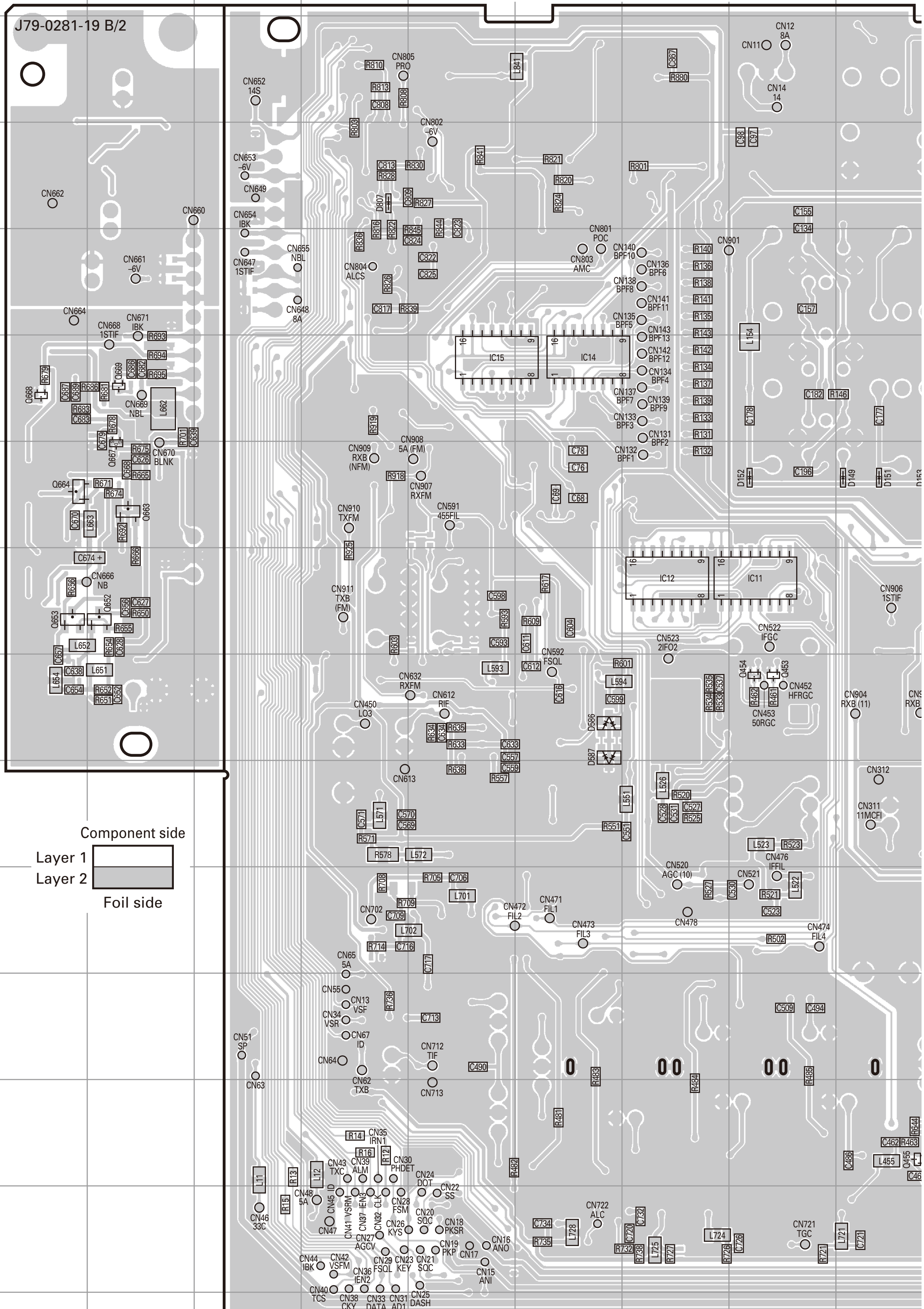
Component side
Layer 1
Layer 2
Foil side

Ref. No.	Address	Ref. No.	Address
IC13	6M	D12	10C
IC521	10L	D13	12B
IC591	7M	D14	12C
IC592	8M	D15	12B
IC631	8N	D17	9D
IC701	11N	D18	9C
IC761	8D	D20	8C
IC801	3O	D21	7C
IC802	4O	D22	7D
IC803	3N	D23	7C
IC861	2L	D101	3C
Q12	12C	D102	3D
Q13	12C	D103	3D
Q14	12B	D104	4F
Q15	10D	D105	2E
Q16	8C	D106	3F
Q131	5L	D107	3F
Q132	6L	D108	3F
Q133	5L	D109	3H
Q134	5L	D110	3F
Q135	4L	D132	3F
Q136	4L	D134	3K
Q137	5L	D136	3F
Q138	4L	D137	3G
Q139	5L	D138	3I
Q140	4L	D139	3G
Q141	4L	D140	3J
Q142	5L	D141	3K
Q143	4L	D142	3J
Q236	7I	D143	3H
Q239	7I	D234	8H
Q267	7G	D235	7I
Q301	11G	D323	9D
Q391	11F	D371	12E
Q421	12G	D421	12G
Q471	10N	D422	13H
Q472	10K	D423	13H
Q473	10M	D441	11H
Q474	10M	D443	12H
Q475	10M	D461	13I
Q476	10M	D462	13I
Q477	10K	D463	13J
Q521	8L	D464	13J
Q522	8L	D471	13M
Q541	8K	D472	13L
Q551	9N	D473	12K
Q571	9N	D474	13M
Q591	6O	D475	10N
Q631	8N	D476	10M
Q641	11I	D477	10L
Q651	8R	D478	10K
Q654	7R	D521	9K
Q660	3R	D522	9K
Q661	3Q	D523	9K
Q662	3Q	D524	9K
Q665	6R	D525	7K
Q666	6R	D526	8L
Q670	5R	D551	9M
Q671	6Q	D552	9M
Q702	10N	D571	8O
Q721	13L	D660	4R
Q741	13F	D661	4R
Q781	4C	D662	5Q
Q782	4B	D663	6Q
Q783	4D	D701	9O
Q784	12O	D702	11O
Q801	4O	D721	13K
Q802	4M	D722	13K
Q803	3M	D723	12H
Q804	3M	D741	12F
Q805	3M	D762	7E
Q806	3N	D781	4C
Q807	3N	D782	3D
Q841	2N	D783	3D
Q842	2N	D799	4C
Q861	2M	D800	4C
Q862	2M	D801	3L
Q903	2I	D802	4M
Q905	2I	D803	2O
Q906	2I	D806	4M
Q908	8J	D808	3M
Q909	8J	D809	3O
Q910	7J	D810	4M
Q911	7J	D811	3N
Q915	5N	D812	3N
Q916	5O	D813	3N
Q917	7O	D841	2N
Q918	8O	D842	2N
Q920	3K	D843	2N
Q925	3L	D861	2M
D11	10C	D862	2M

TS-590S PC BOARD

TX-RX UNIT (X57-785X-XX)
0-11: K 2-71: E
Foil side view (J79-0281-19)

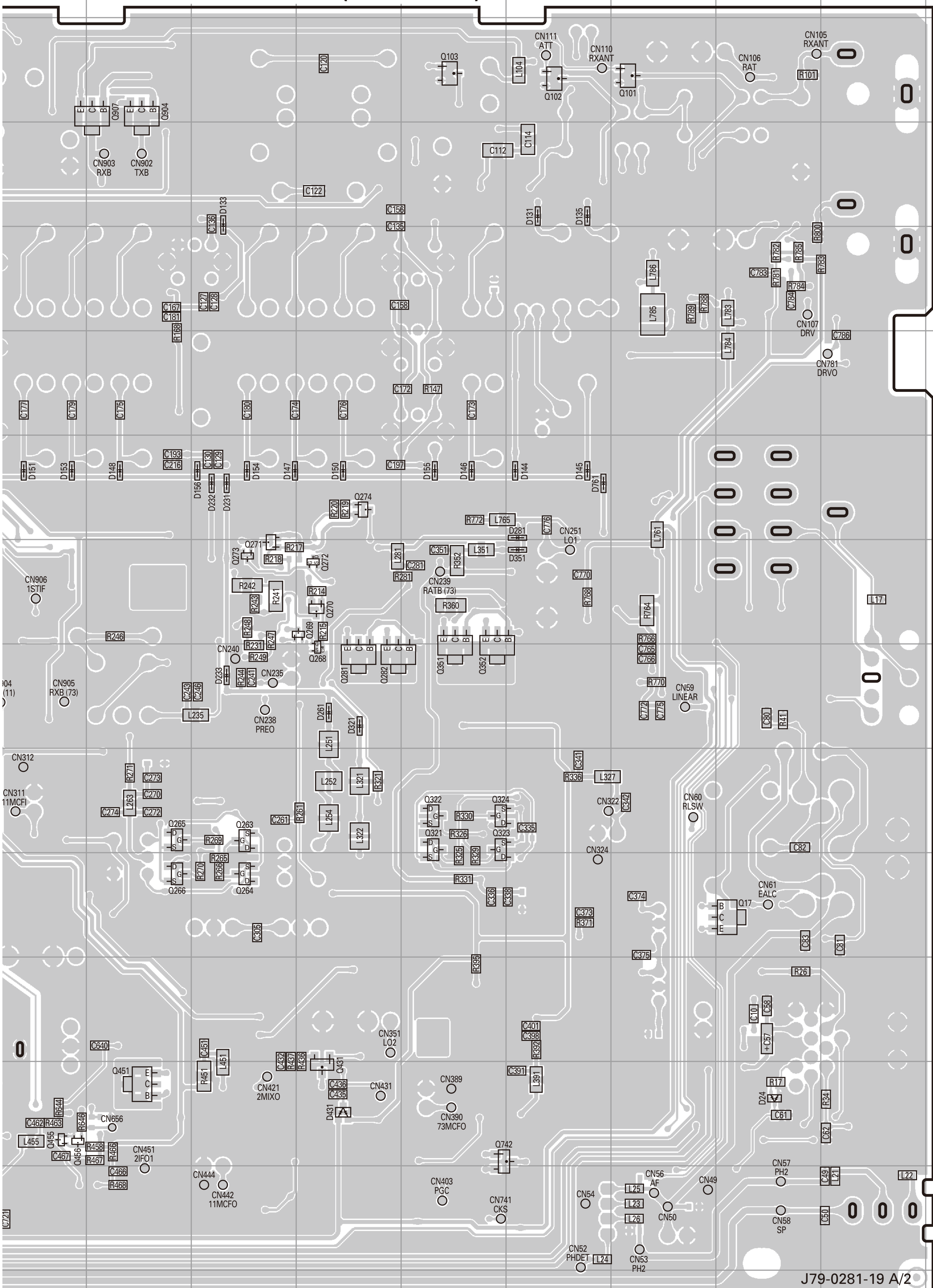
Ref. No.	Address
IC11	7I
IC12	7H
IC14	5G
IC15	5F
Q17	10Q
Q101	2P
Q102	2O
Q103	2N
Q263	9L
Q264	10L
Q265	9K
Q266	10K
Q268	8M
Q269	7M
Q270	7M
Q271	7L
Q272	7M
Q273	7L
Q274	6M
Q281	8M
Q282	8M
Q321	9N
Q322	9N
Q323	9N
Q324	9N
Q351	8N
Q352	8N
Q431	12M
Q451	12K
Q453	8I
Q454	8I
Q455	12J
Q456	12J
Q652	7C
Q653	7B
Q663	6C
Q664	6B
Q667	6C
Q668	5B
Q669	5C
Q742	12N
Q904	2K
Q907	2K
D24	12Q
D131	3O
D133	3L
D135	3O
D144	6O
D145	6O
D146	6N
D147	6L
D148	6K
D149	6J
D150	6M
D151	6J
D152	6I
D153	6J
D154	6L
D155	6N
D156	6L
D231	6L
D232	6L
D233	8L
D261	8M
D281	6O
D321	8M
D351	7O
D431	12M
D586	8G
D587	8G
D761	6O
D807	3E



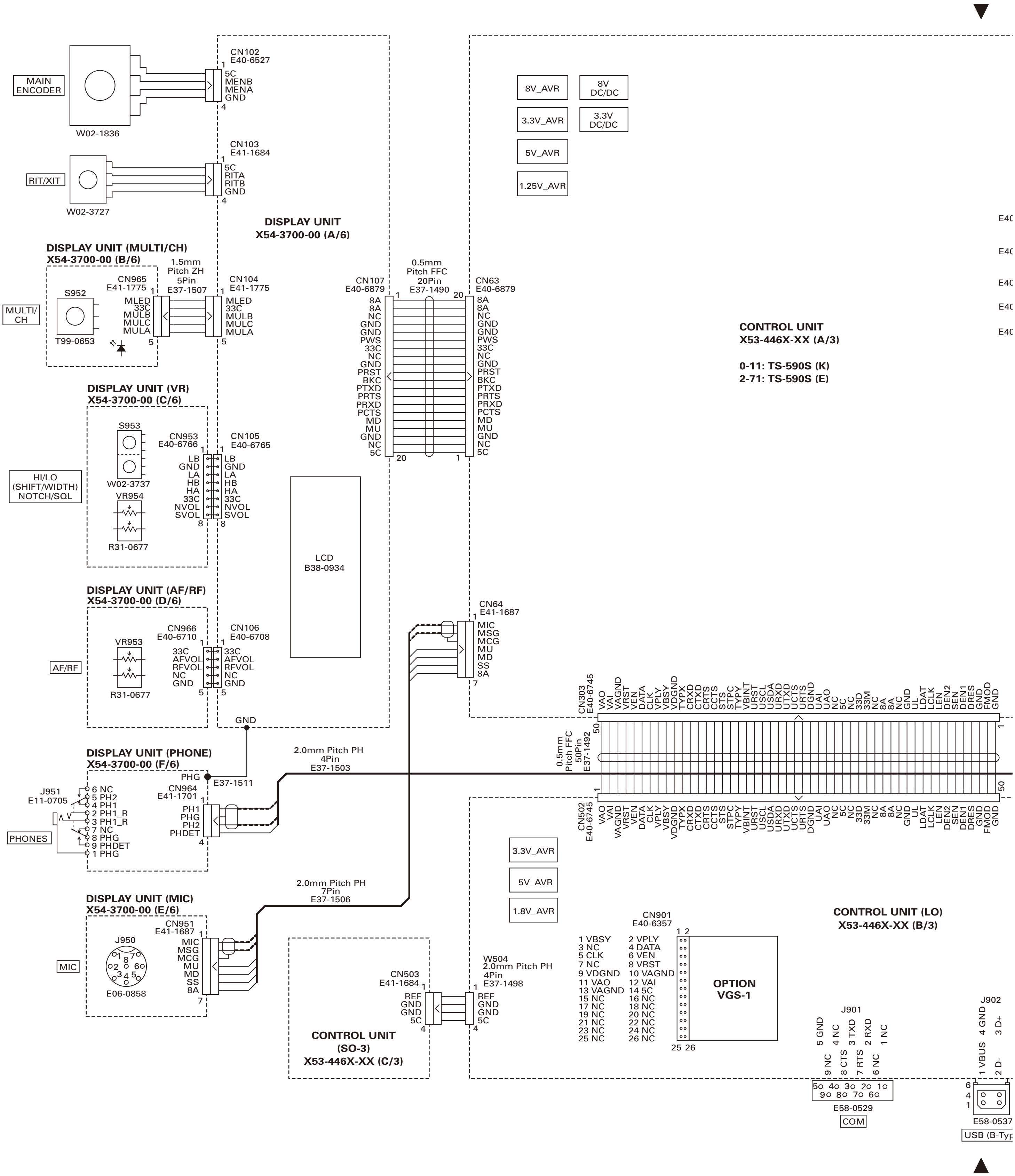
Component side
Layer 1
Layer 2
Foil side

TX-RX UNIT (X57-785X-XX)
0-11: K 2-71: E
Foil side view (J79-0281-19)

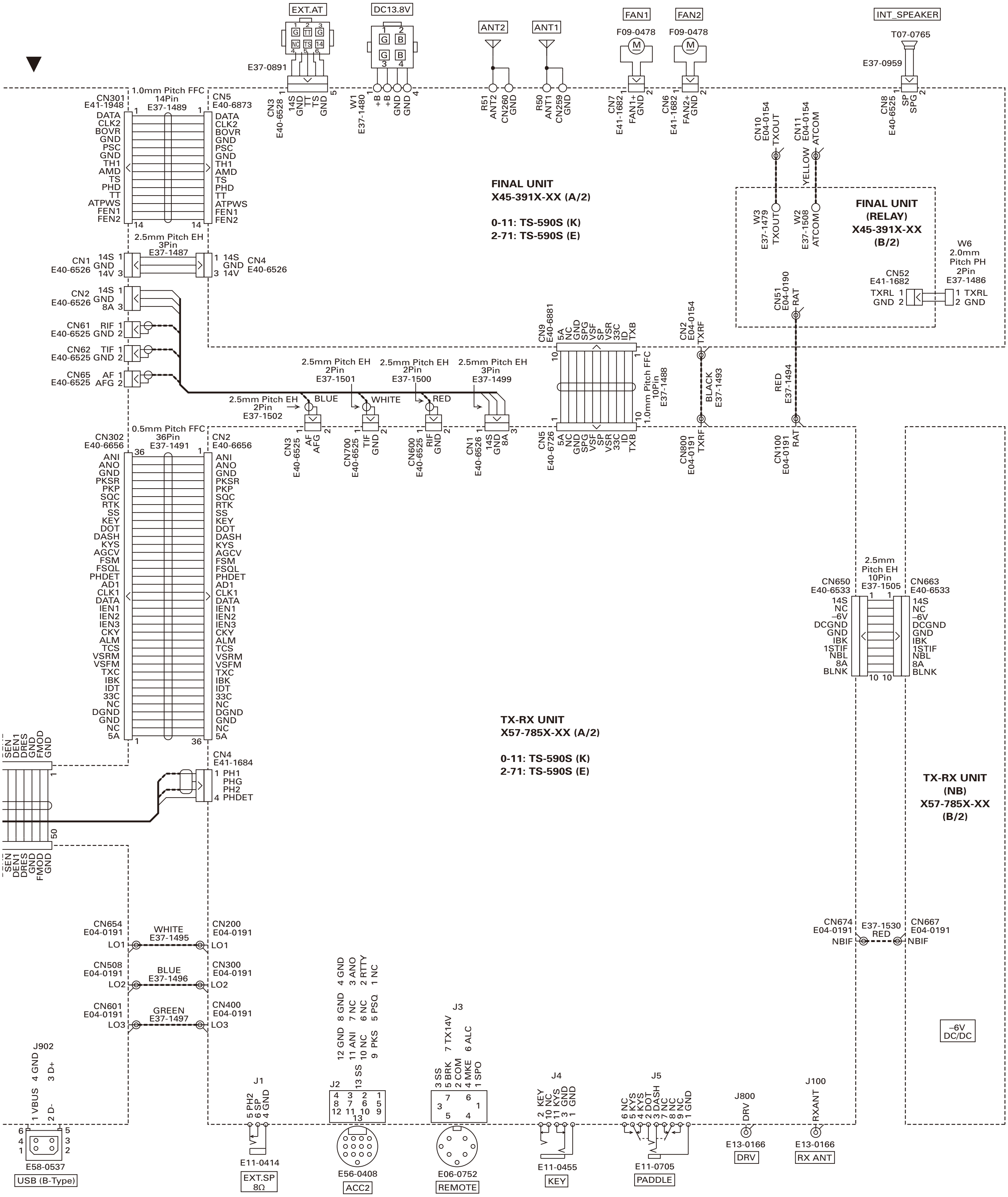
PC BOARD TS-590S



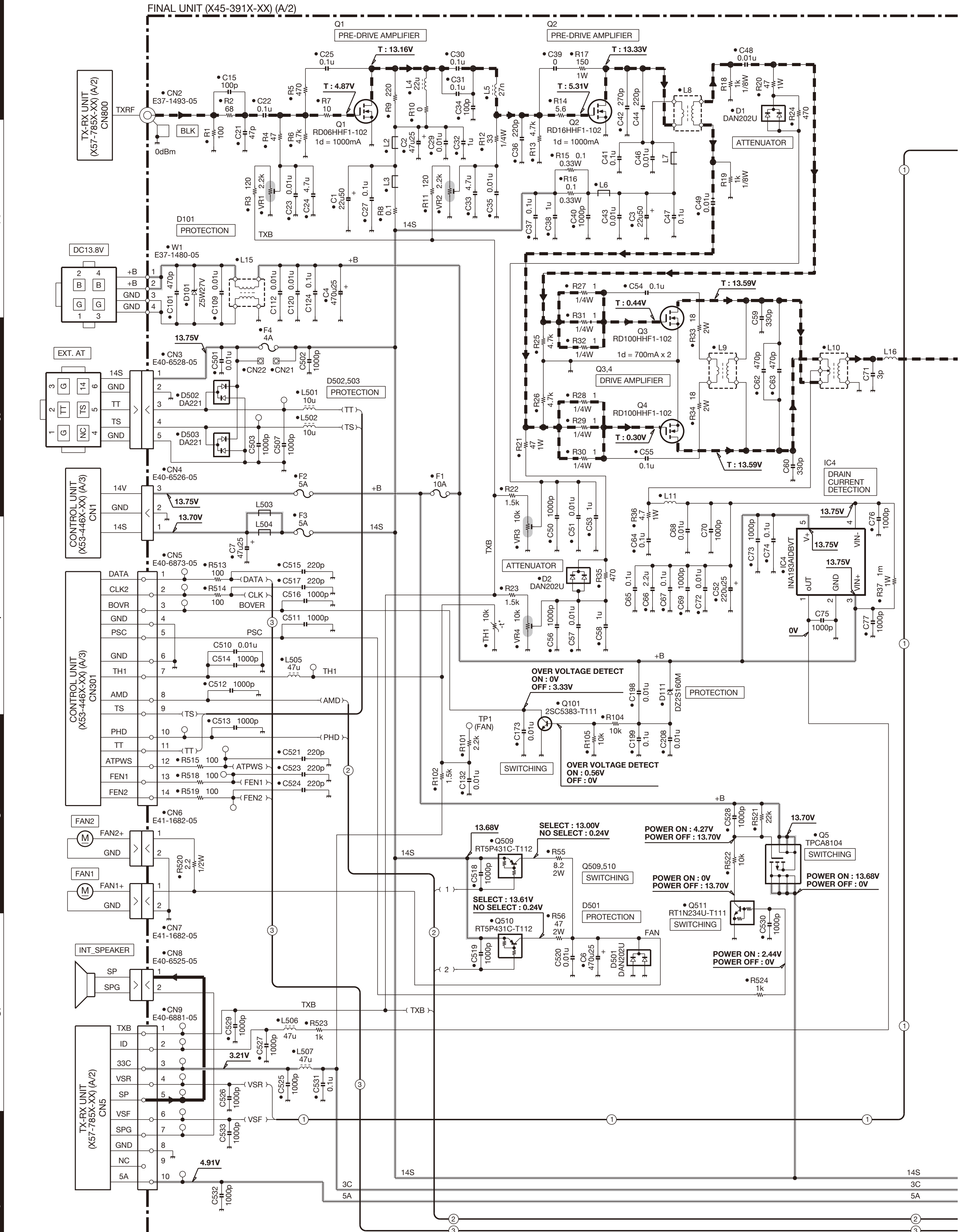
INTERCONNECTION DIAGRAM



INTERCONNECTION DIAGRAM

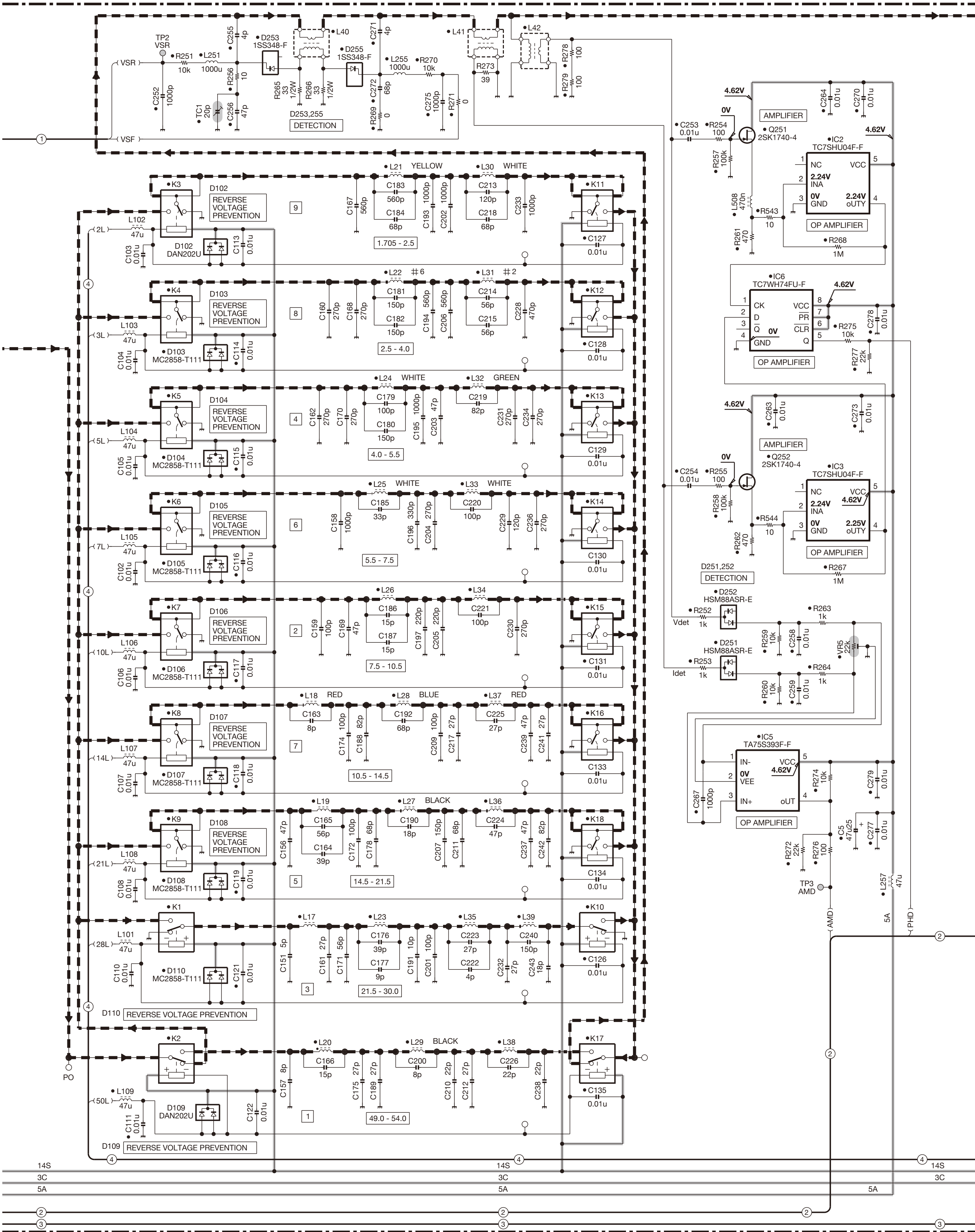


TS-590S SCHEMATIC DIAGRAM



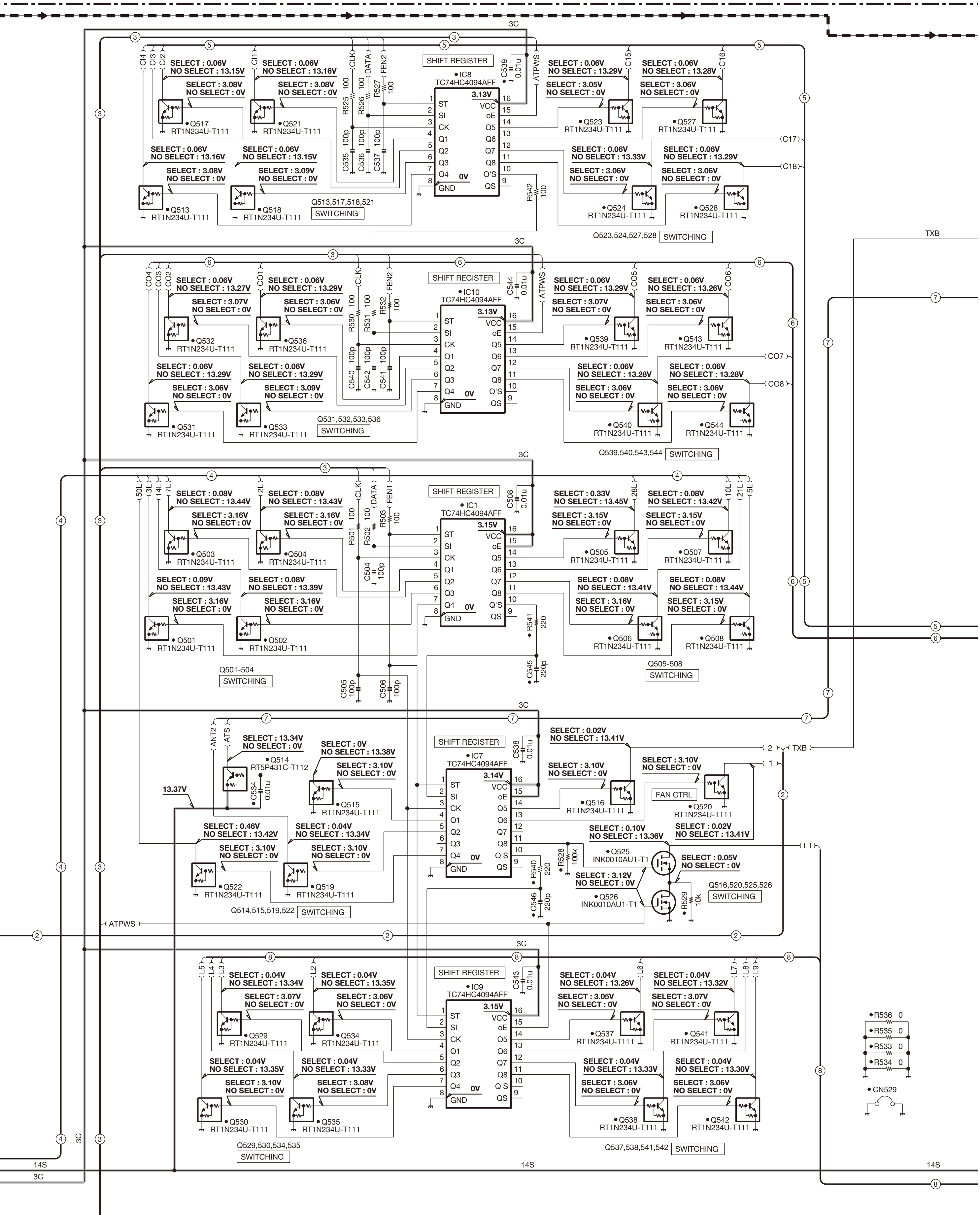
SCHEMATIC DIAGRAM TS-590S

FINAL UNIT (X45-391X-XX) (A/2)

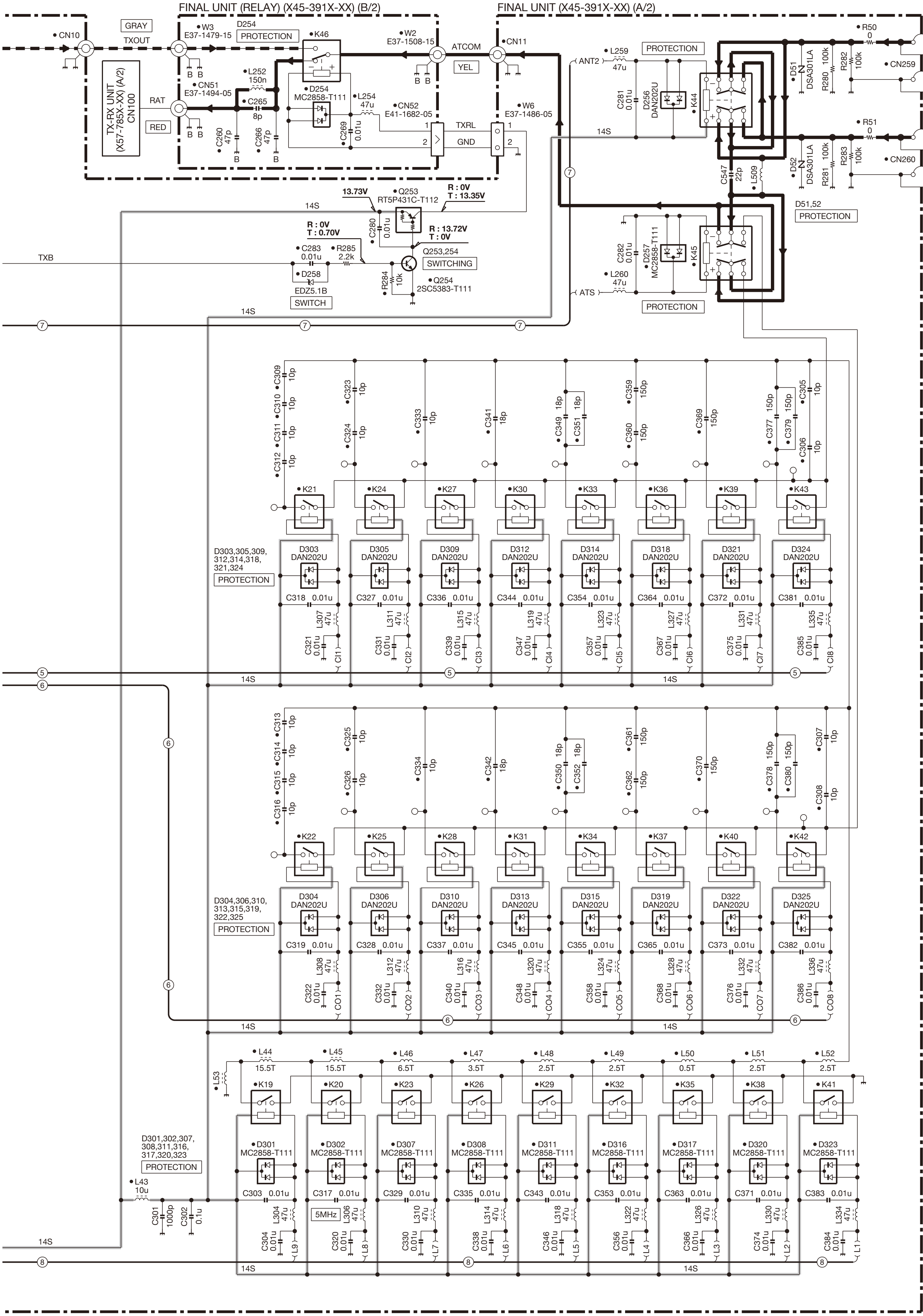


TS-590S SCHEMATIC DIAGRAM

FINAL UNIT (X45-391X-XX) (A/2)

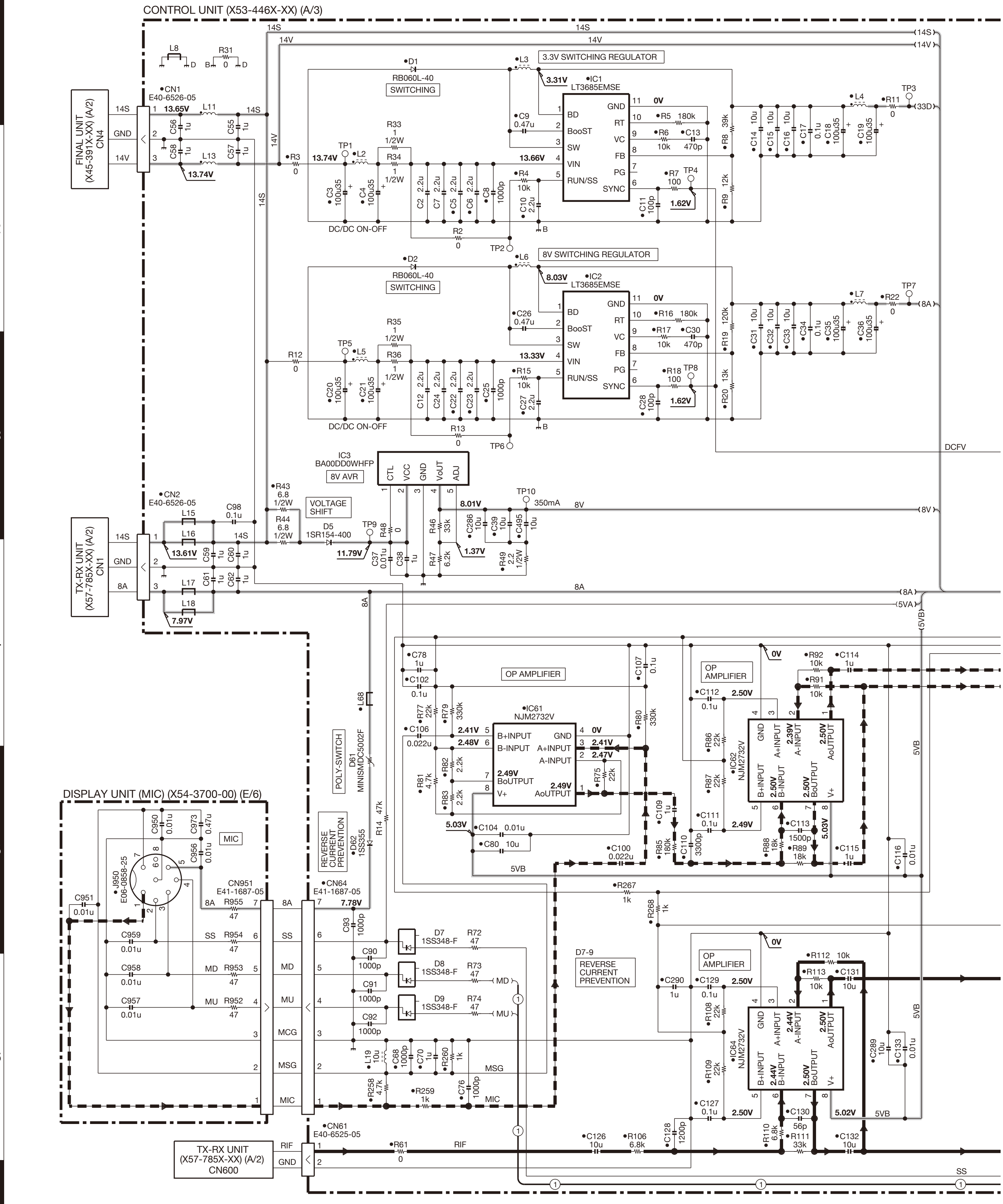


SCHEMATIC DIAGRAM TS-590S

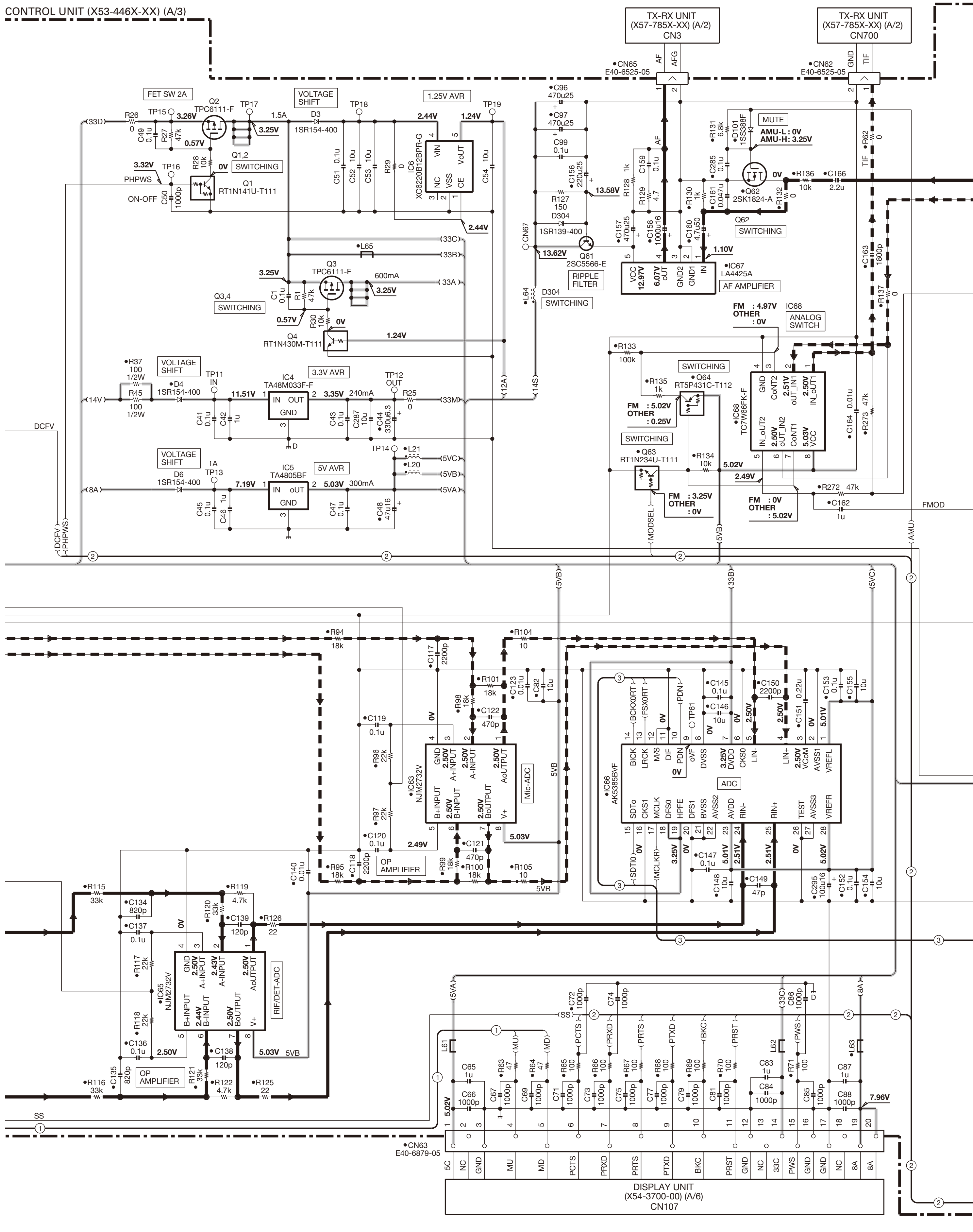


Note : The components marked with a dot (•) are parts of layer 1.

TS-590S SCHEMATIC DIAGRAM

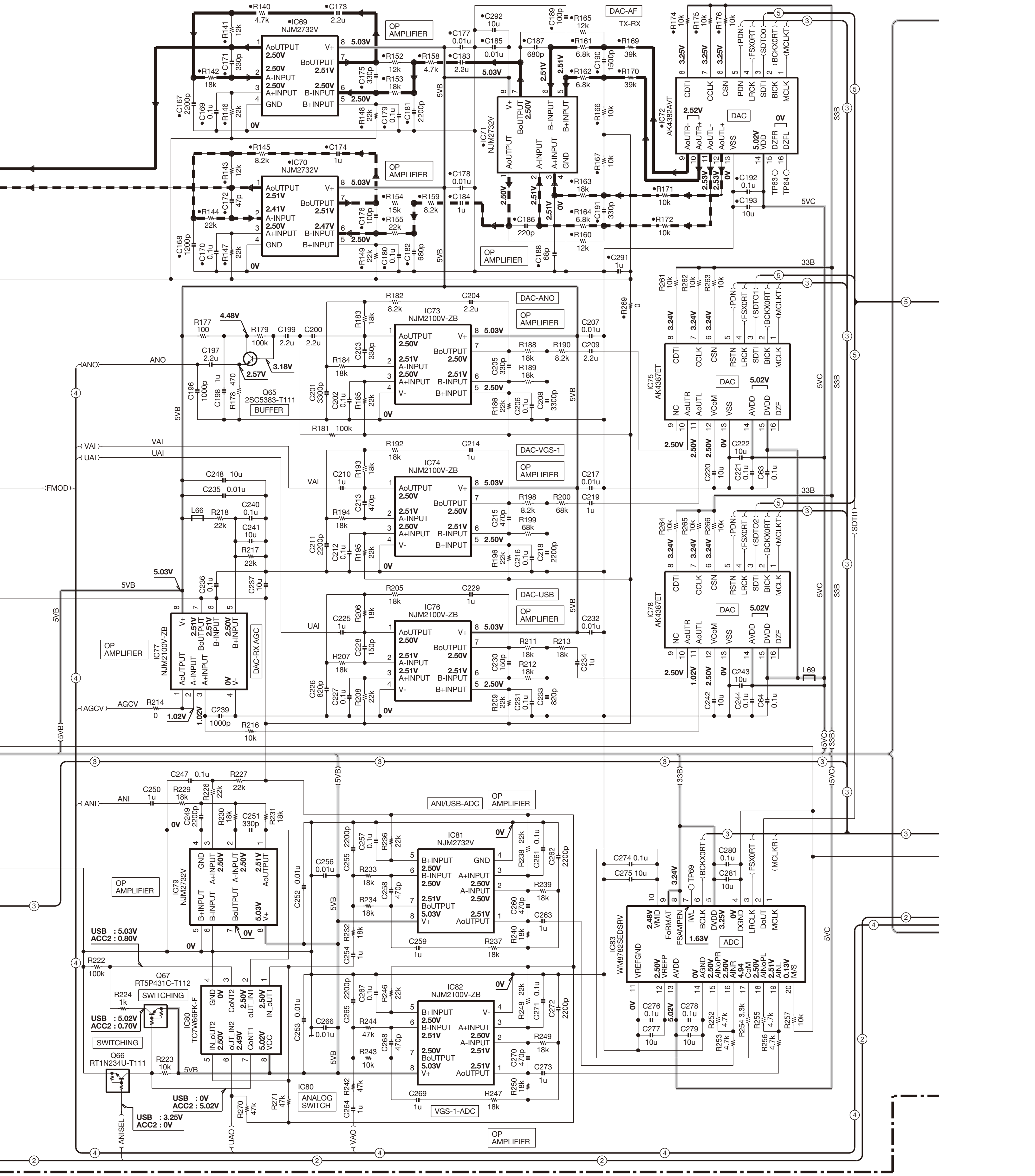


SCHEMATIC DIAGRAM TS-590S



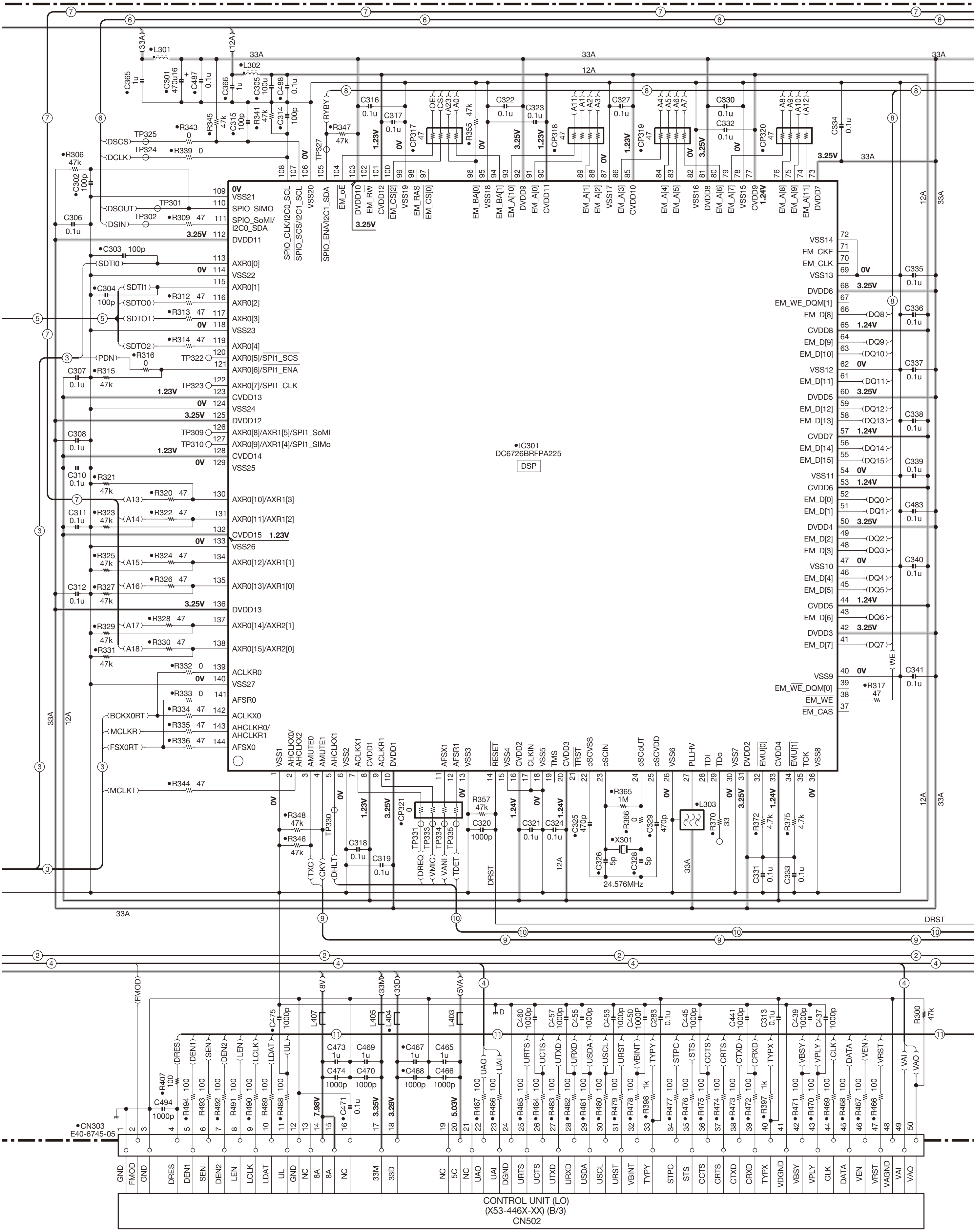
TS-590S SCHEMATIC DIAGRAM

CONTROL UNIT (X53-446X-XX) (A/3)



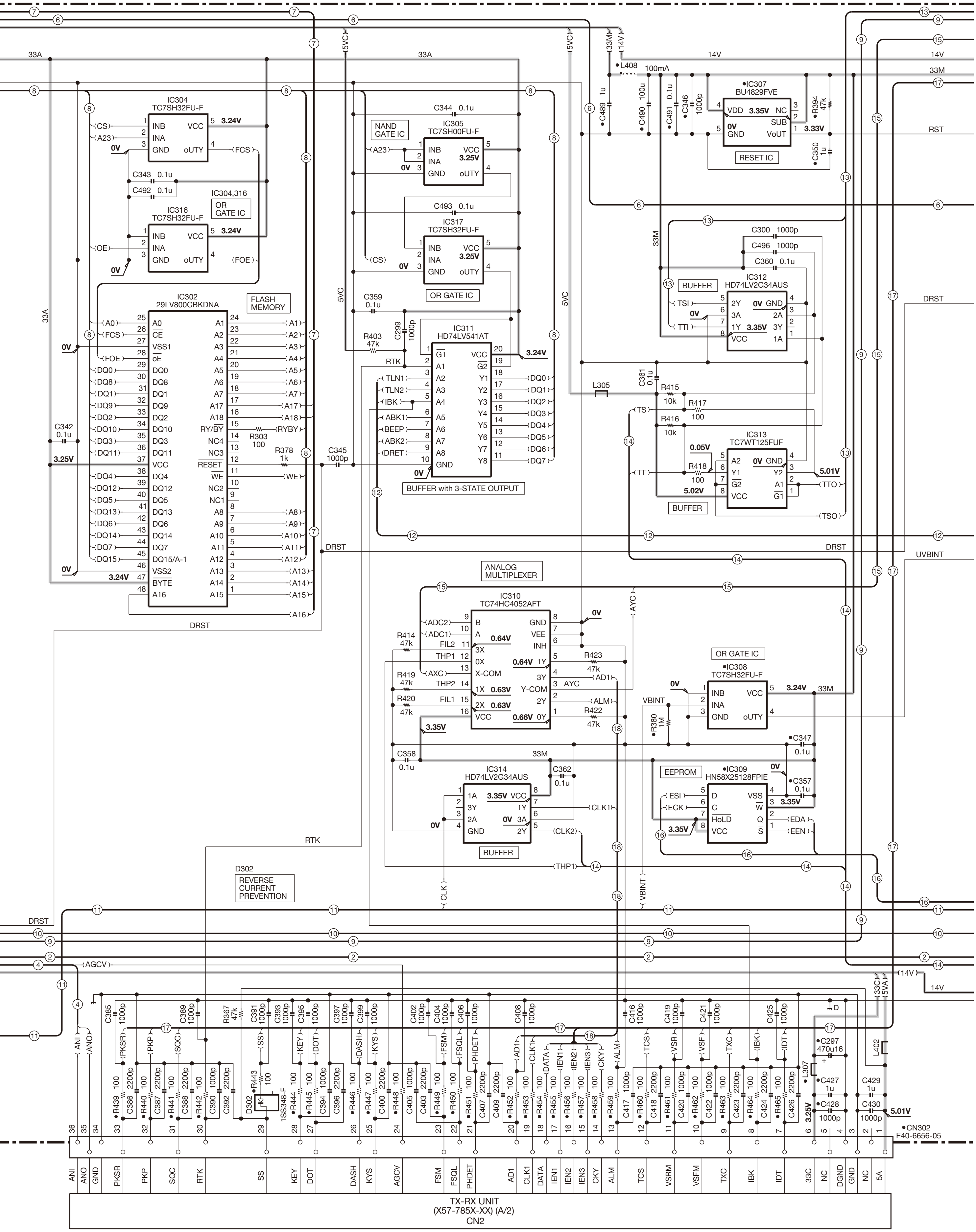
SCHEMATIC DIAGRAM TS-590S

CONTROL UNIT (X53-446X-XX) (A/3)



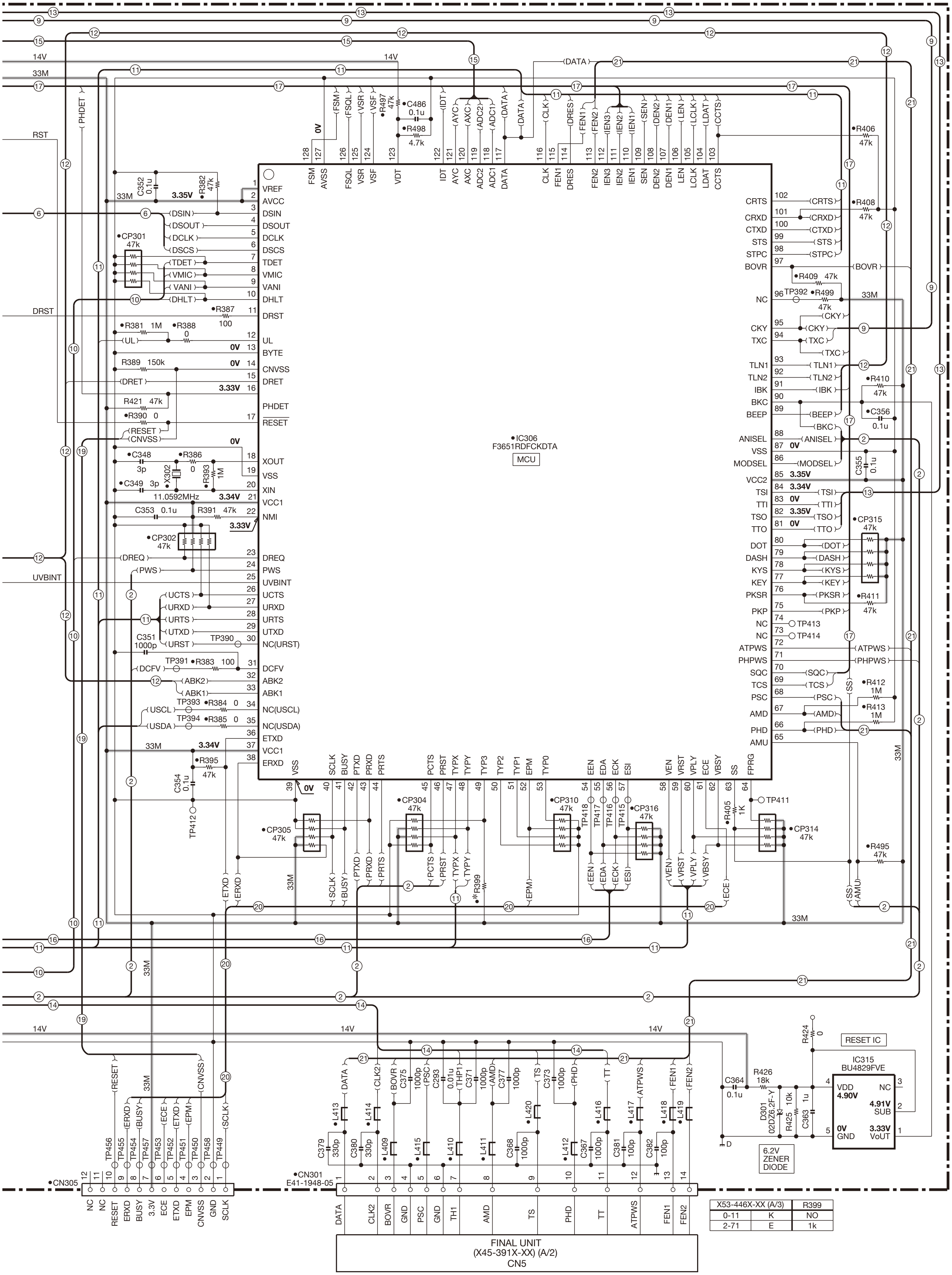
TS-590S SCHEMATIC DIAGRAM

CONTROL UNIT (X53-446X-XX) (A/3)



SCHEMATIC DIAGRAM TS-590S

CONTROL UNIT (X53-446X-XX) (A/3)

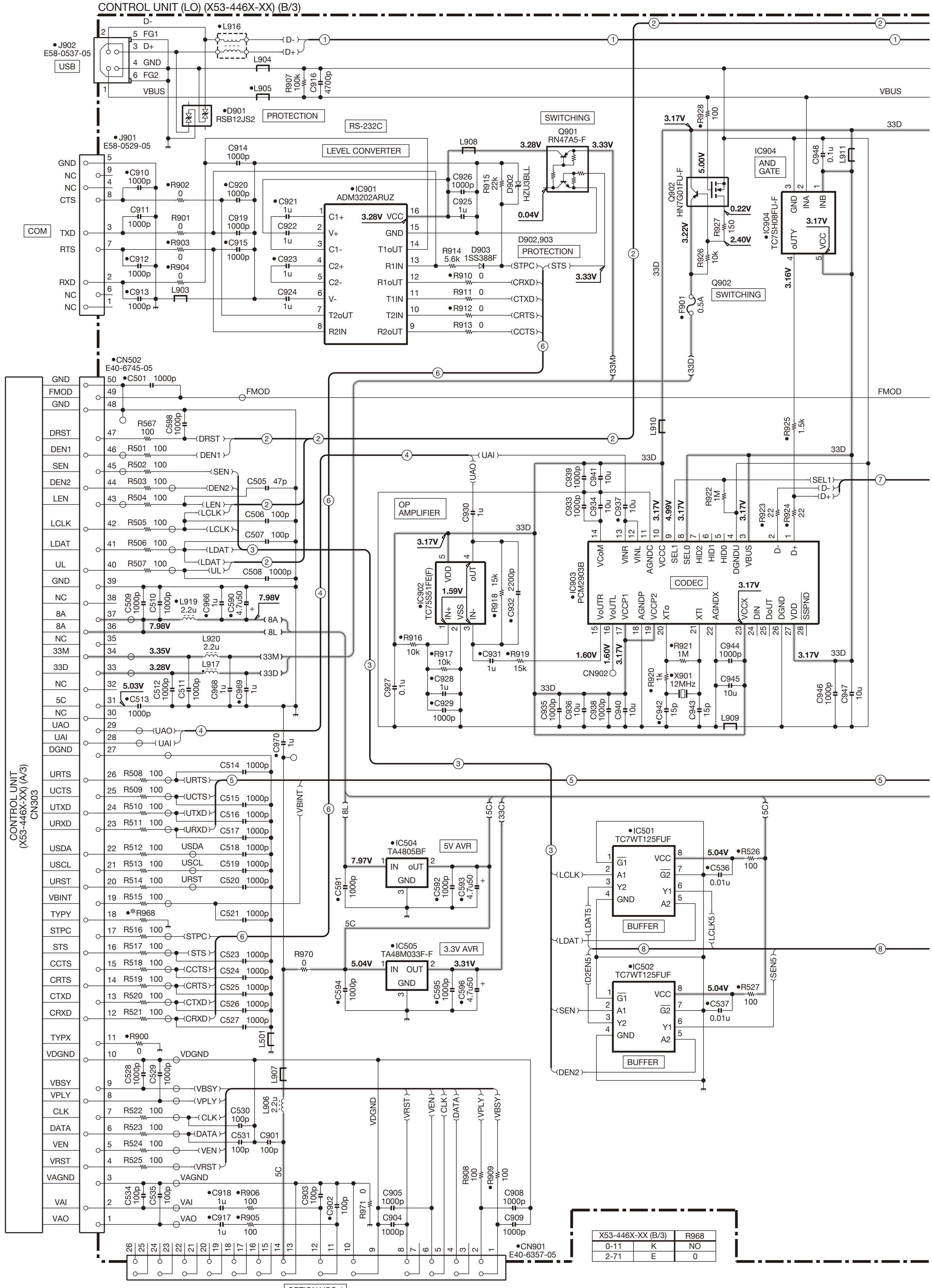


X53-446X-XX (A/3)		R399
0-11	K	NO
2-71	E	1k

Note : The components marked with a dot (•) are parts of layer 1.

TS-590S SCHEMATIC DIAGRAM

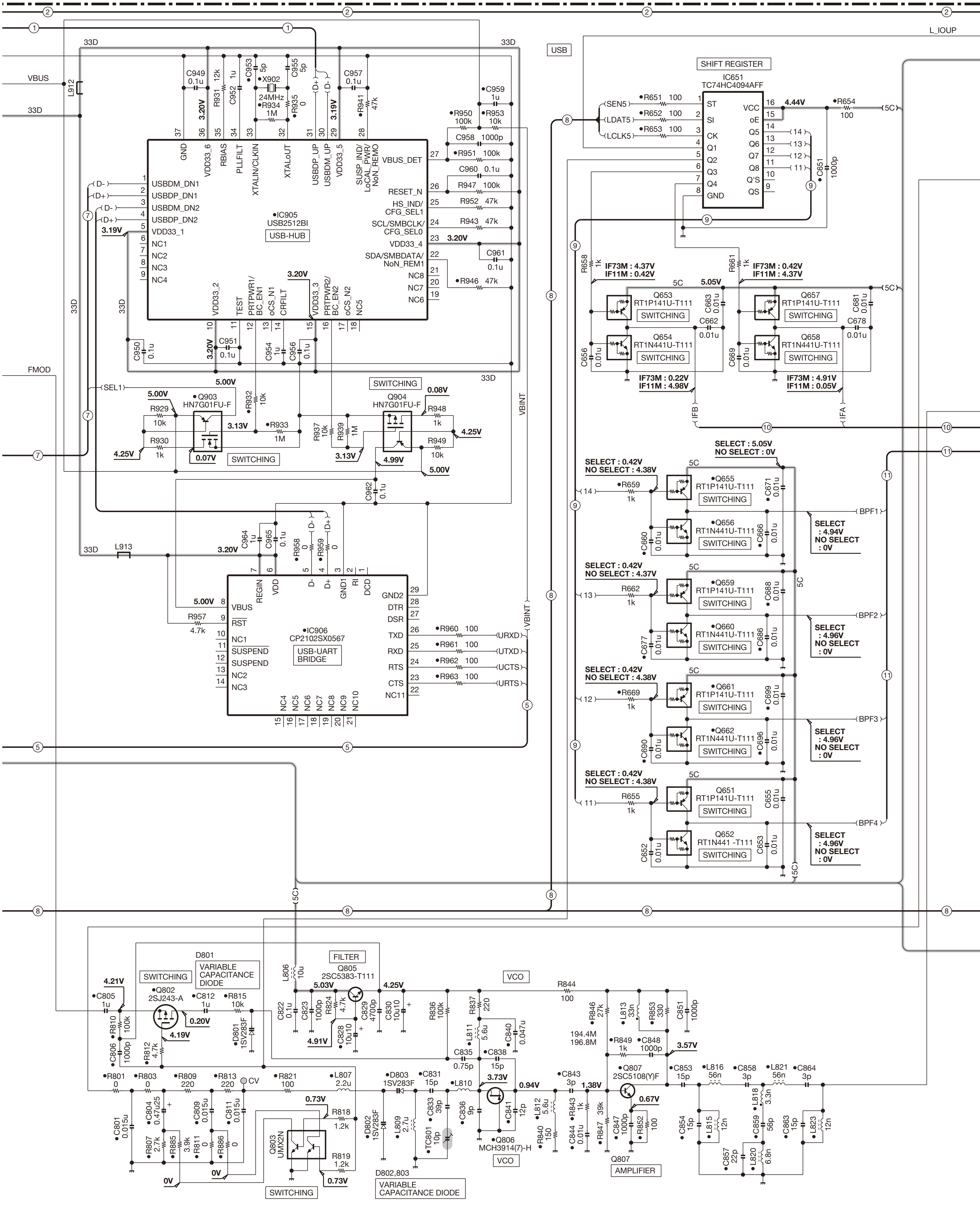
CONTROL UNIT (LO) (X53-446X-XX) (B/3)



X53-446X-XX (B/3)		R968
0-11	K	NO
2-71	E	0

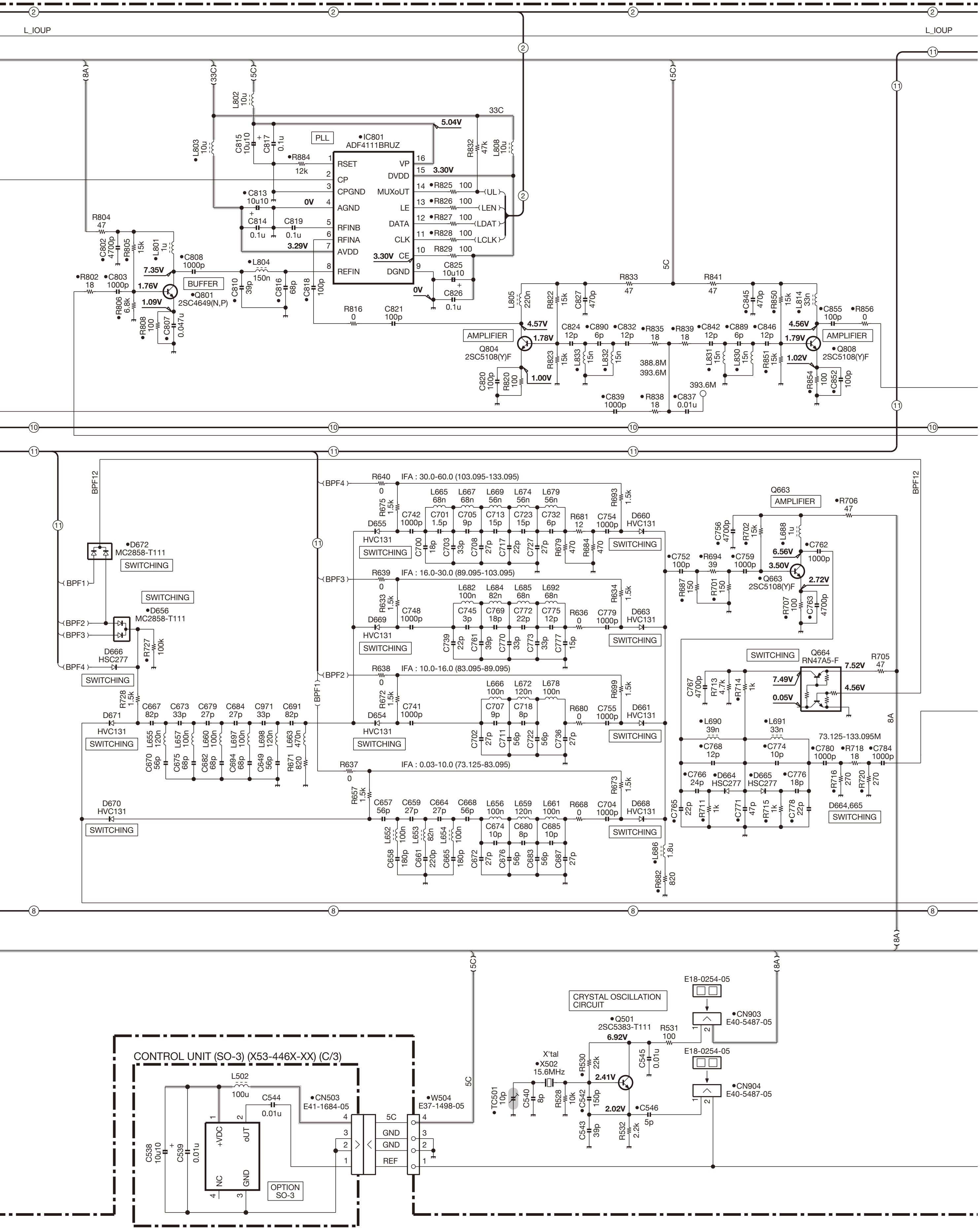
SCHEMATIC DIAGRAM TS-590S

CONTROL UNIT (LO) (X53-446X-XX) (B/3)



TS-590S SCHEMATIC DIAGRAM

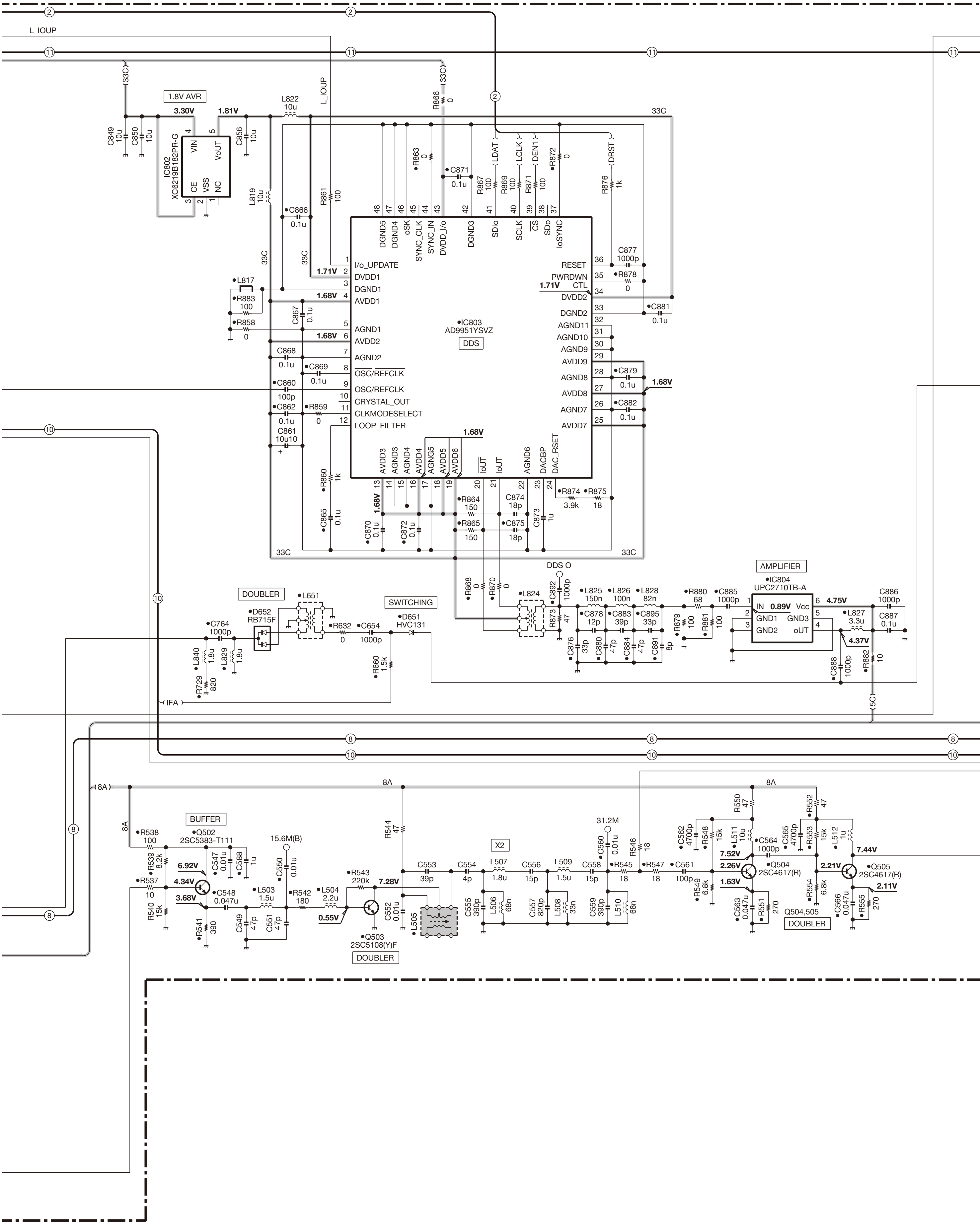
CONTROL UNIT (LO) (X53-446X-XX) (B/3)



X53-446 (B/3) 3/5, X53-446 (C/3) 1/1

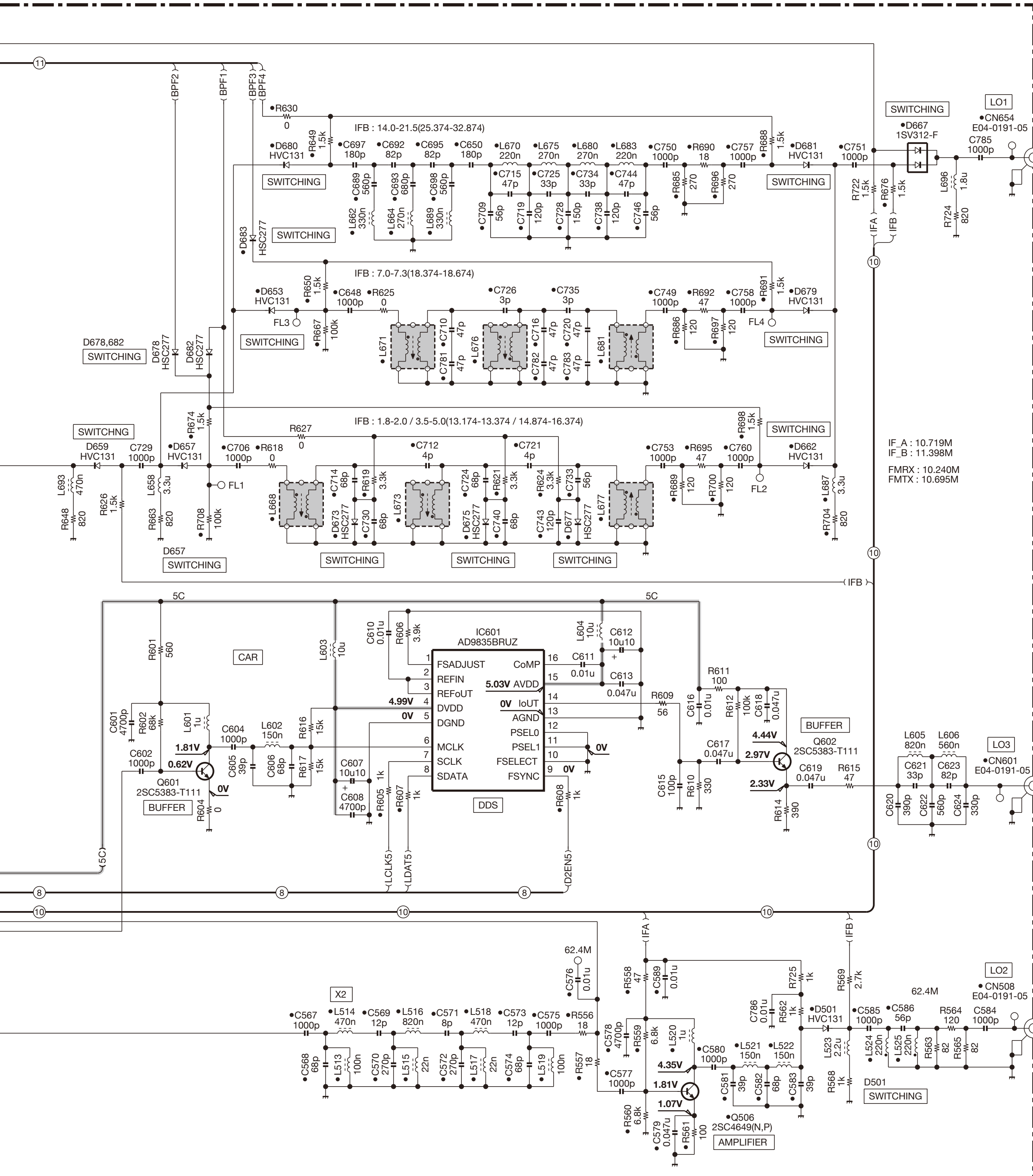
SCHEMATIC DIAGRAM TS-590S

CONTROL UNIT (LO) (X53-446X-XX) (B/3)



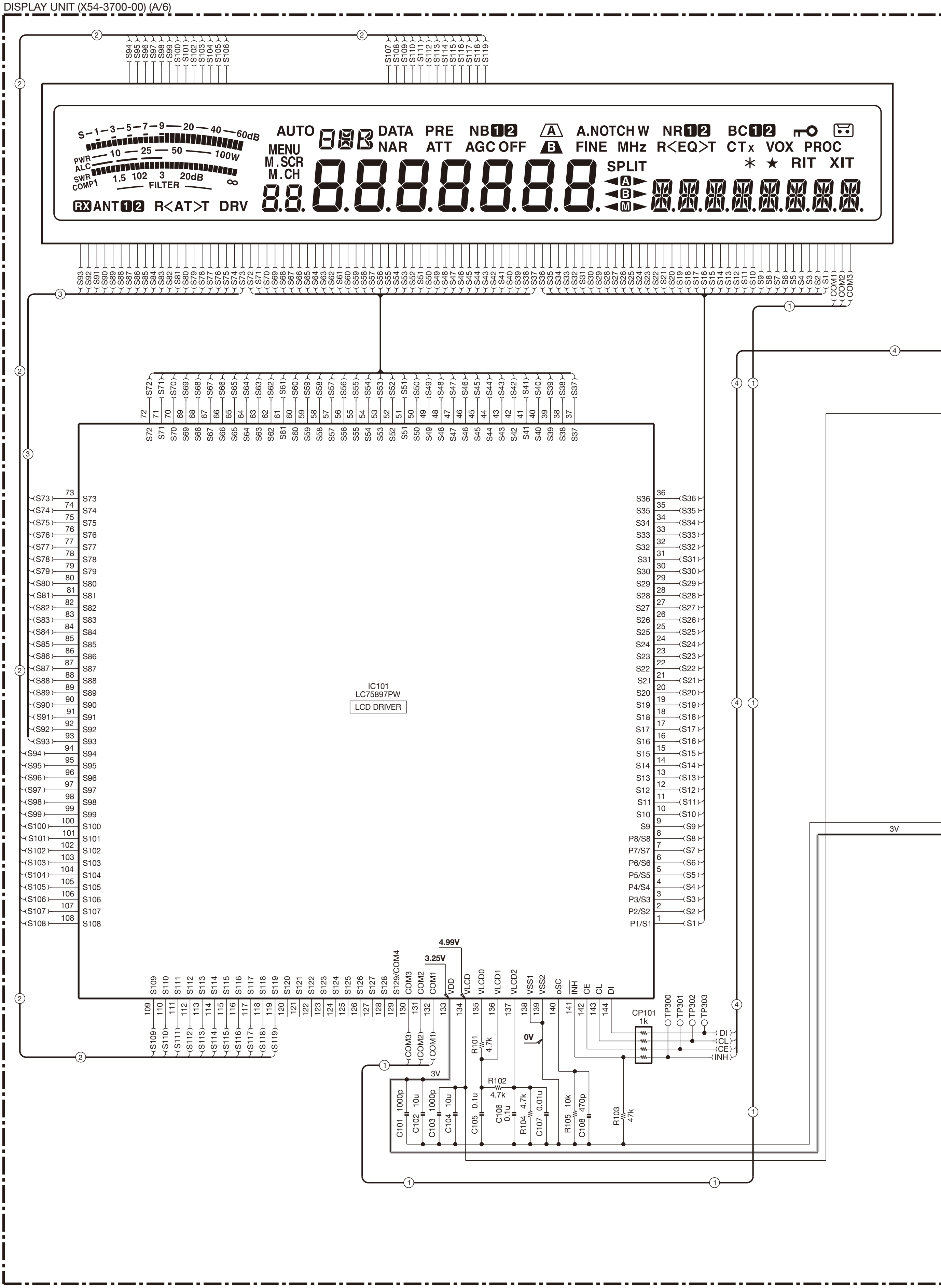
TS-590S SCHEMATIC DIAGRAM

CONTROL UNIT (LO) (X53-446X-XX) (B/3)



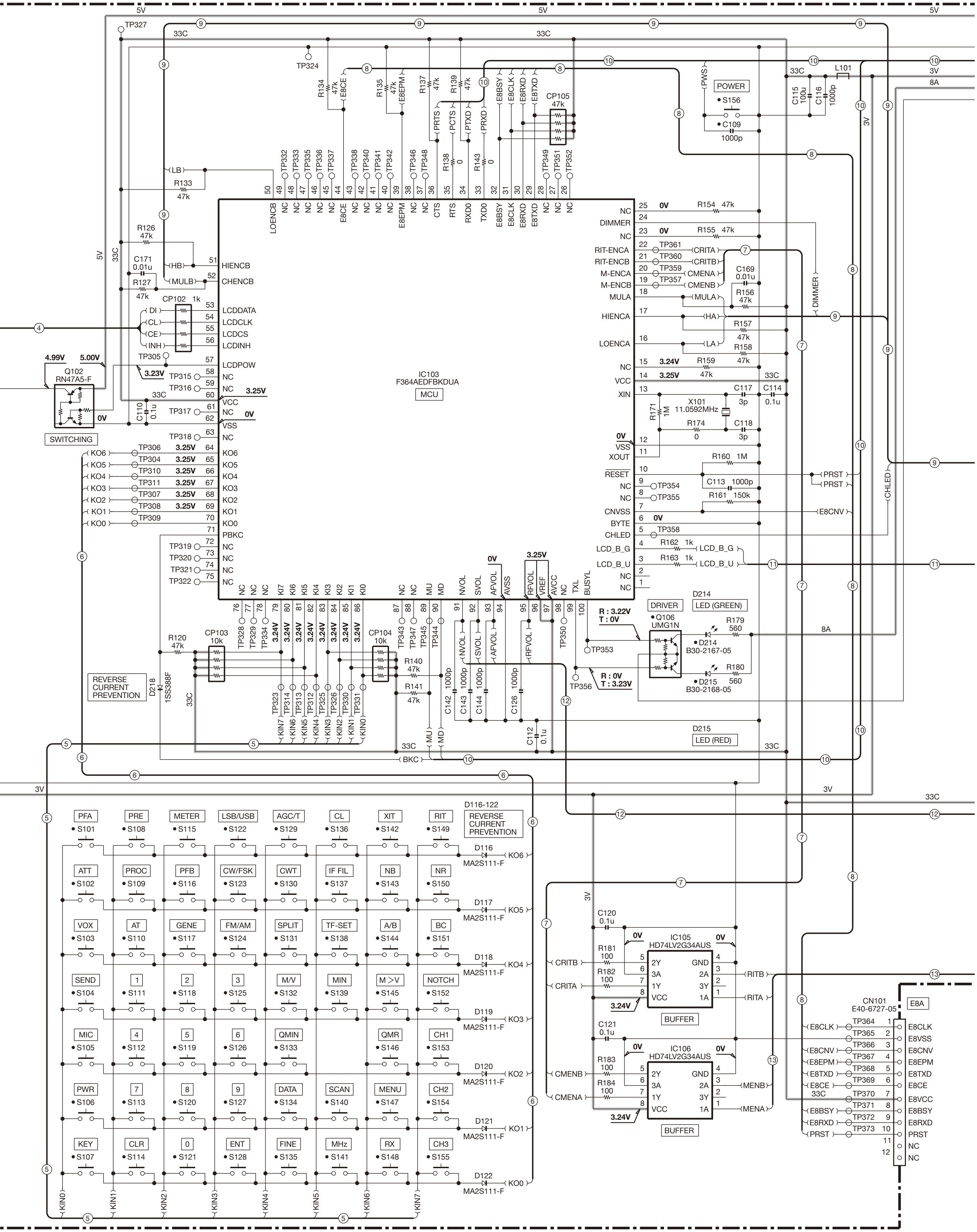
Note : The components marked with a dot (•) are parts of layer 1.

DISPLAY UNIT (X54-3700-00) (A/6)



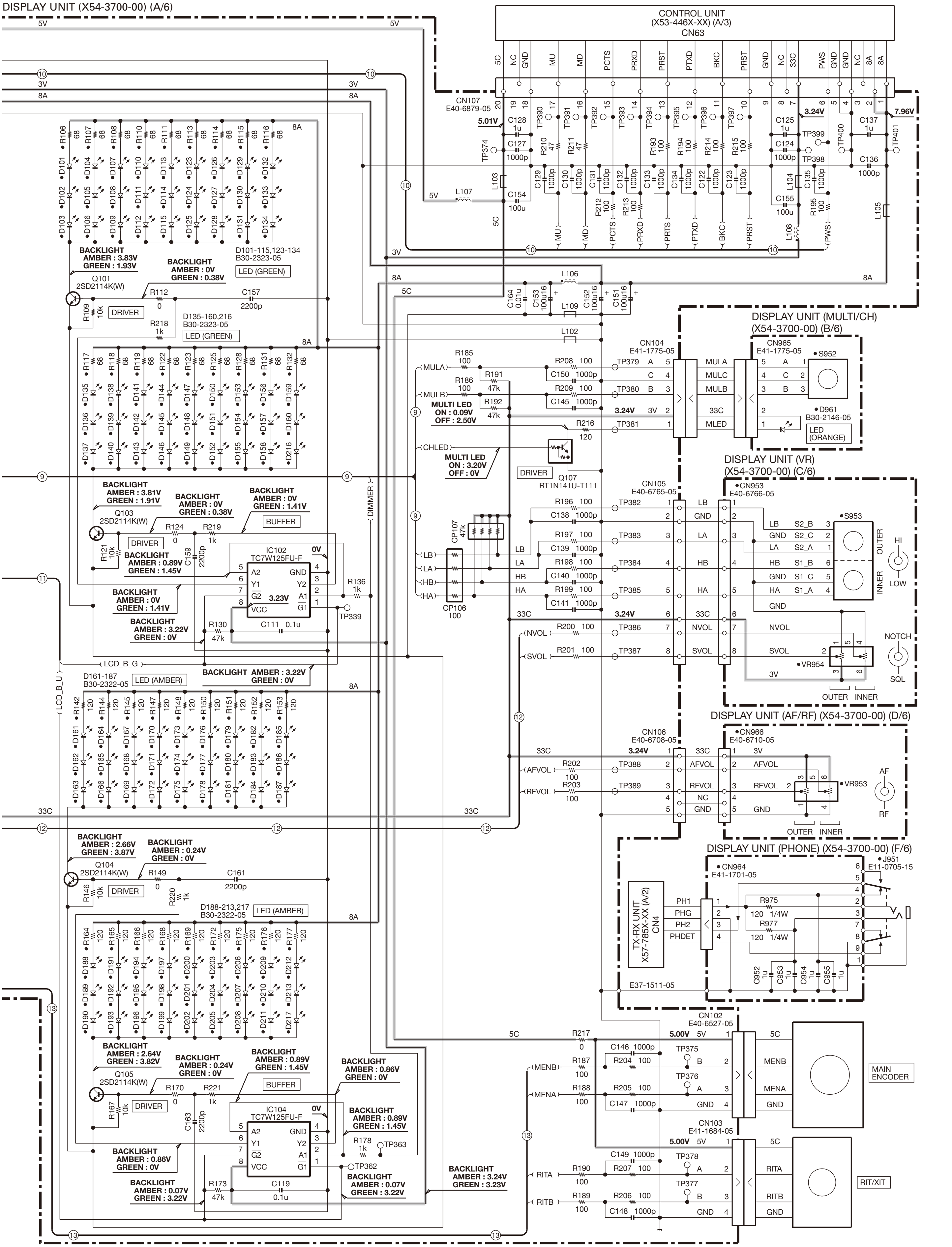
TS-590S SCHEMATIC DIAGRAM

DISPLAY UNIT (X54-3700-00) (A/6)



SCHEMATIC DIAGRAM TS-590S

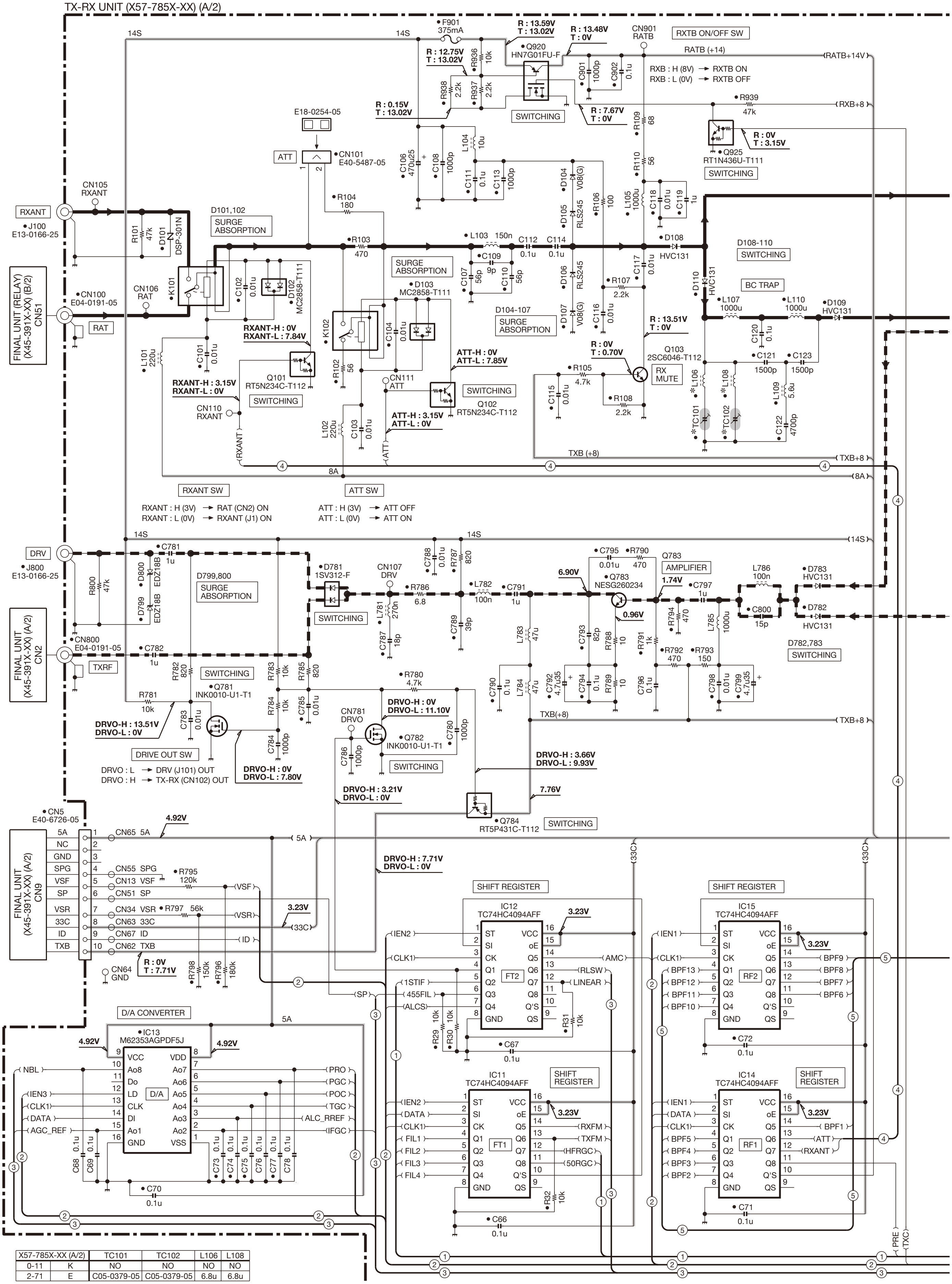
DISPLAY UNIT (X54-3700-00) (A/6)



Note : The components marked with a dot (•) are parts of layer 1.

TS-590S SCHEMATIC DIAGRAM

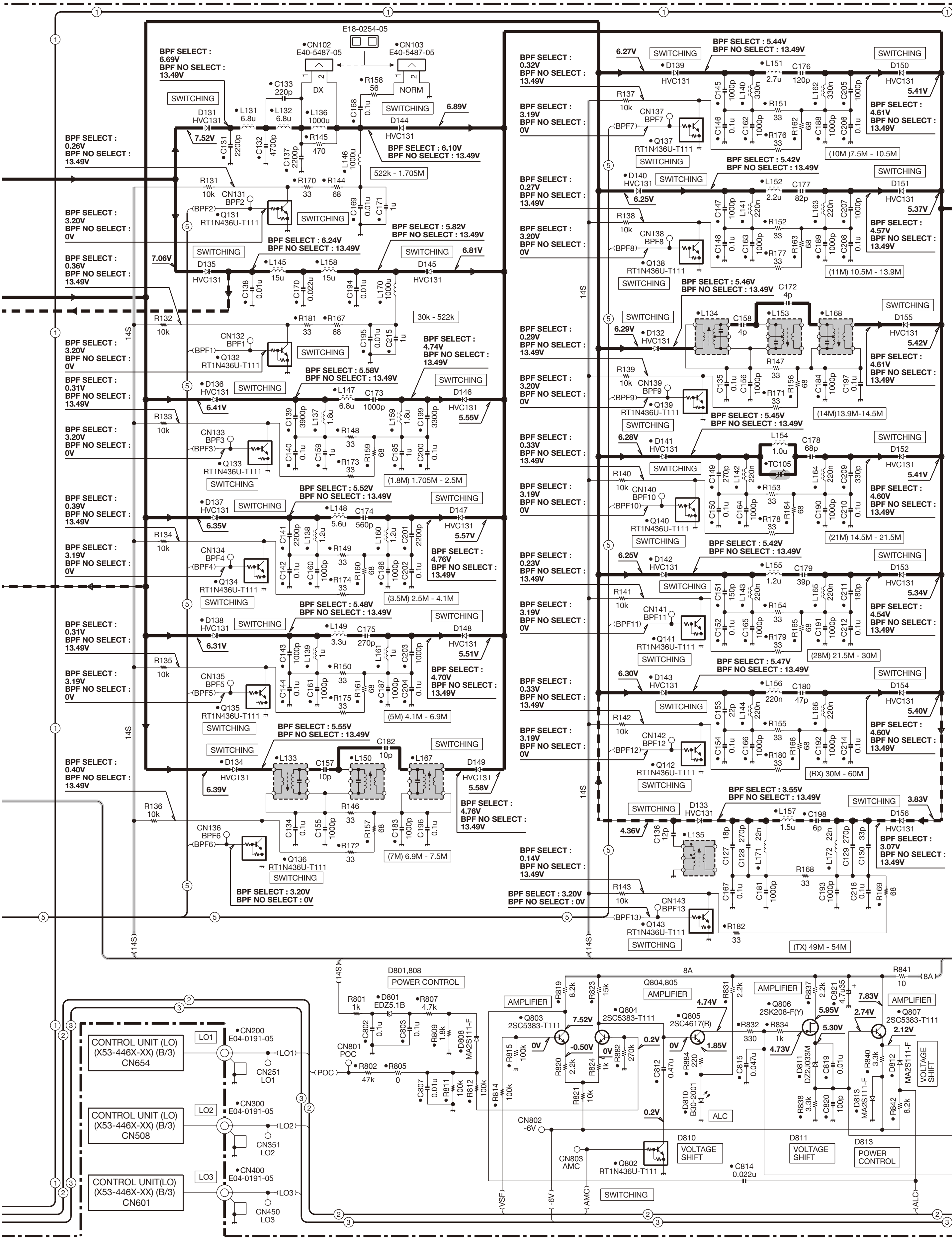
TX-RX UNIT (X57-785X-XX) (A/2)



X57-785X-XX (A/2)	TC101	TC102	L106	L108
0-11	K	NO	NO	NO	NO
2-71	E	C05-0379-05	C05-0379-05	6.8u	6.8u

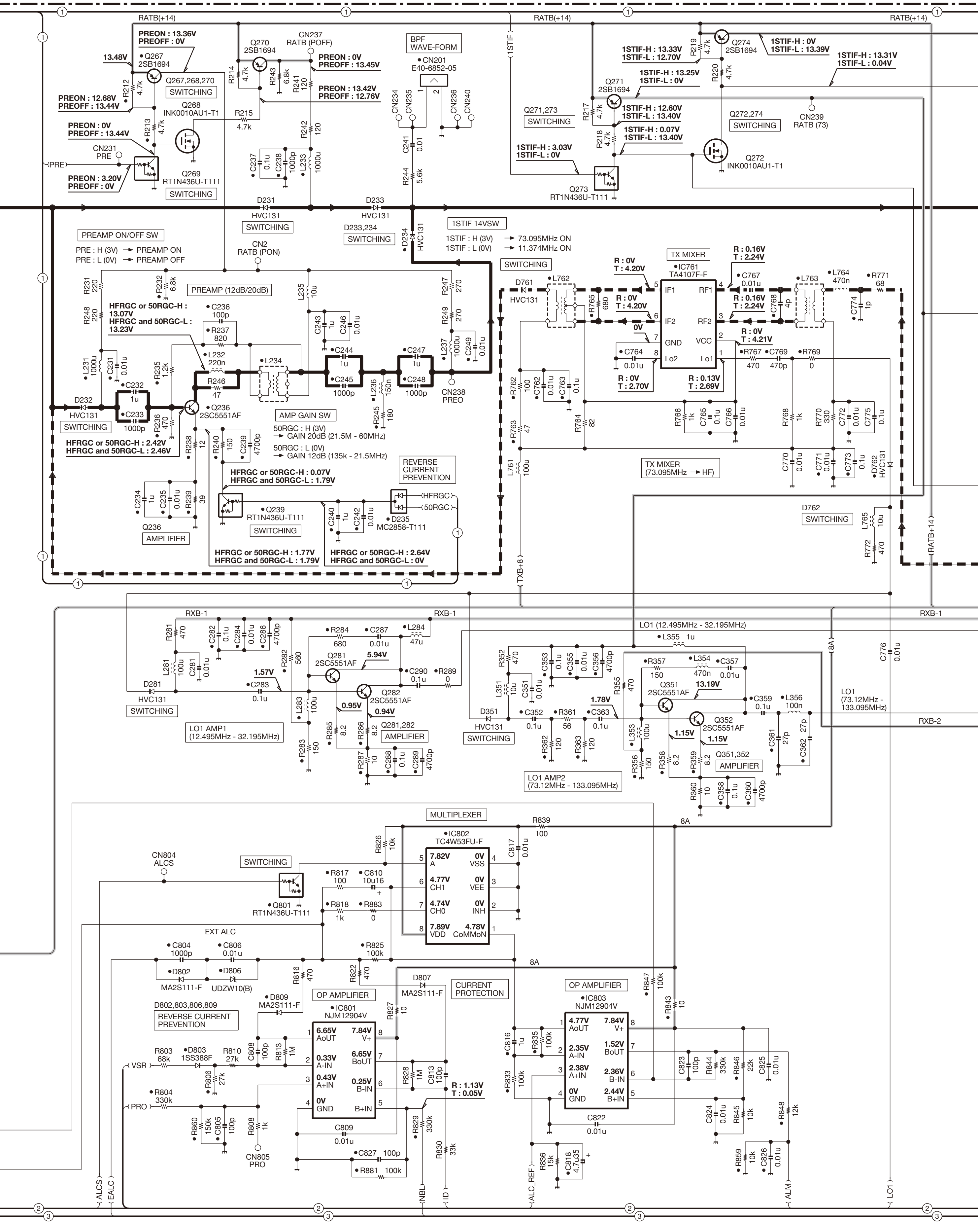
SCHEMATIC DIAGRAM TS-590S

TX-RX UNIT (X57-785X-XX) (A/2)



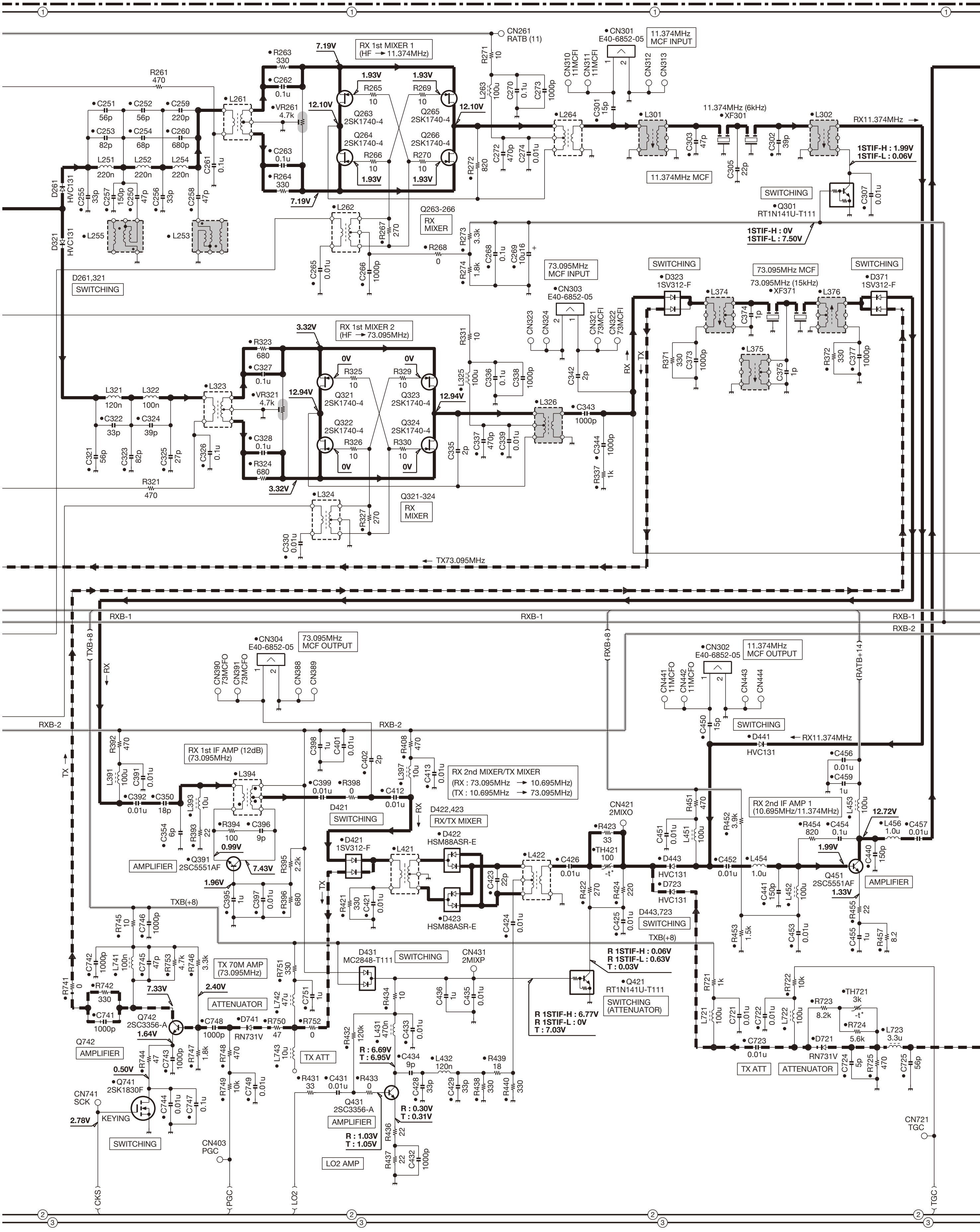
TS-590S SCHEMATIC DIAGRAM

TX-RX UNIT (X57-785X-XX) (A/2)



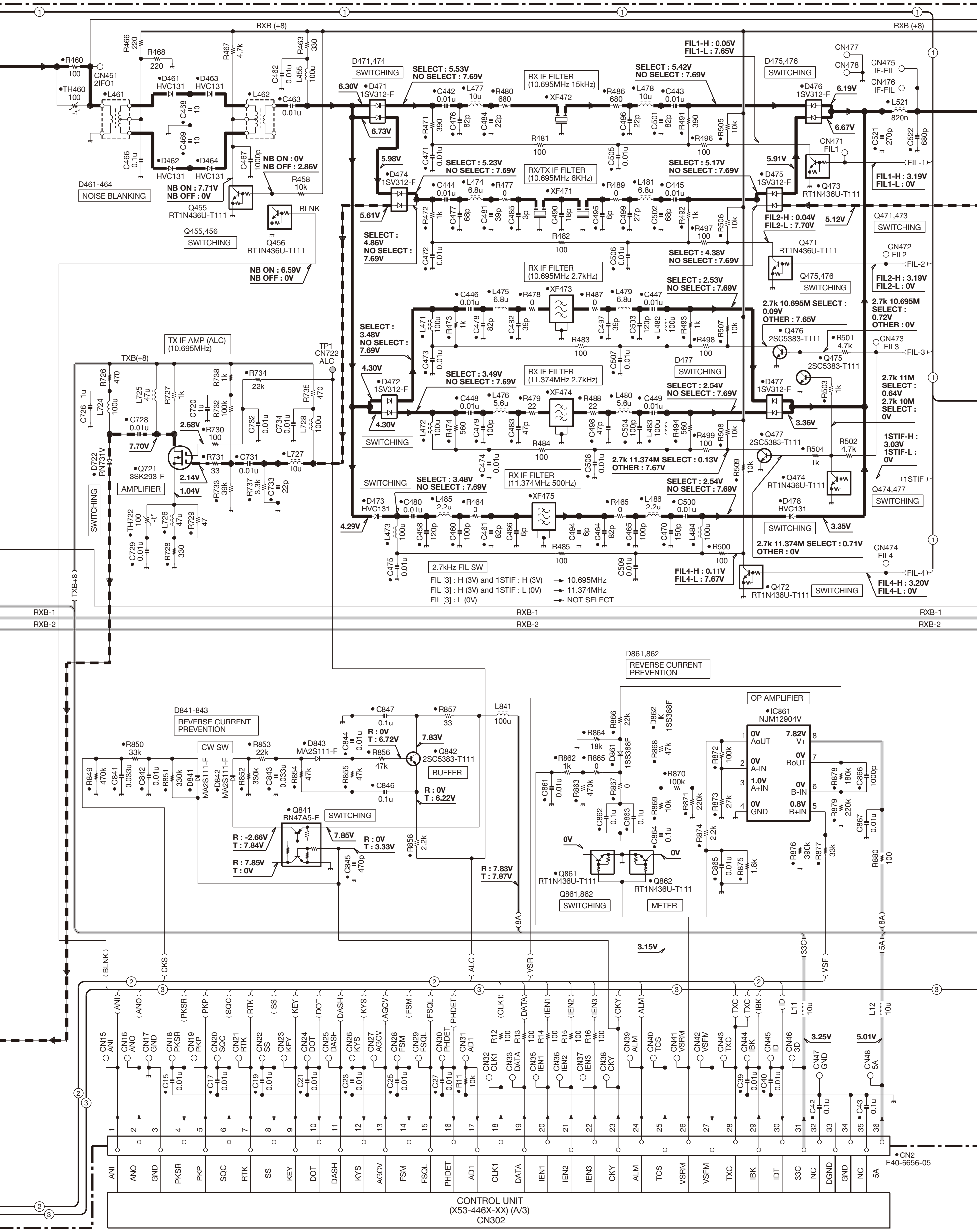
SCHEMATIC DIAGRAM TS-590S

TX-RX UNIT (X57-785X-XX) (A/2)



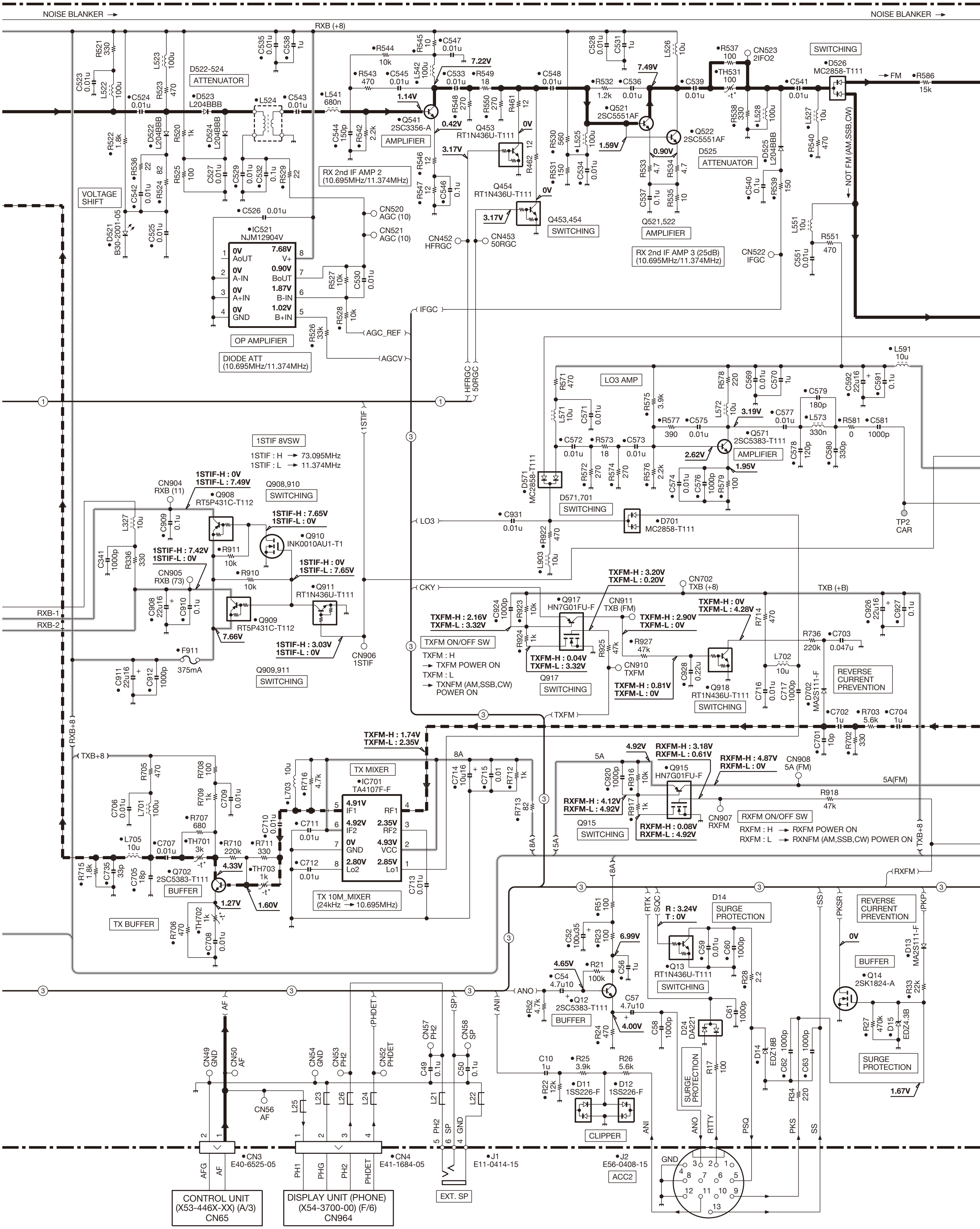
TS-590S SCHEMATIC DIAGRAM

TX-RX UNIT (X57-785X-XX) (A/2)



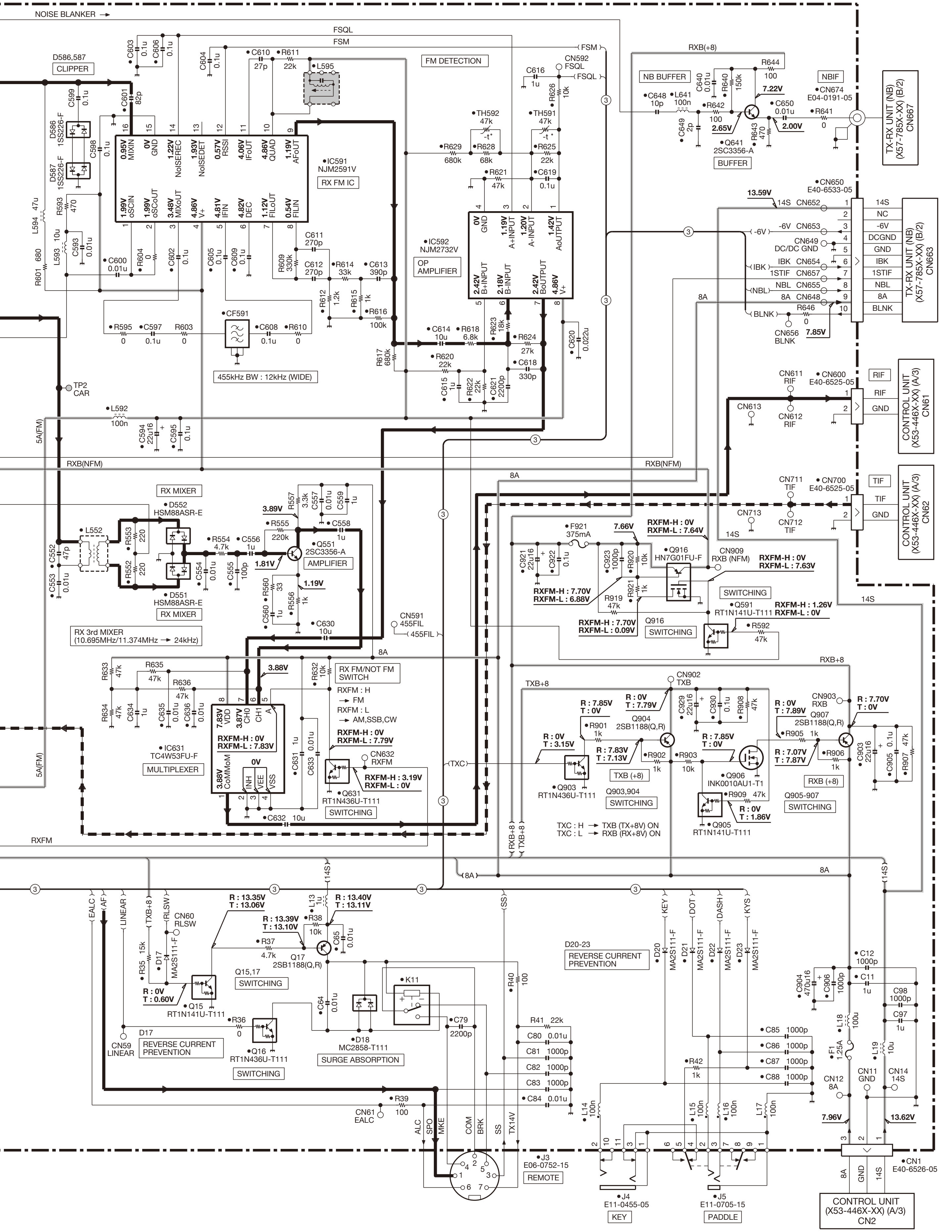
SCHEMATIC DIAGRAM TS-590S

TX-RX UNIT (X57-785X-XX) (A/2)



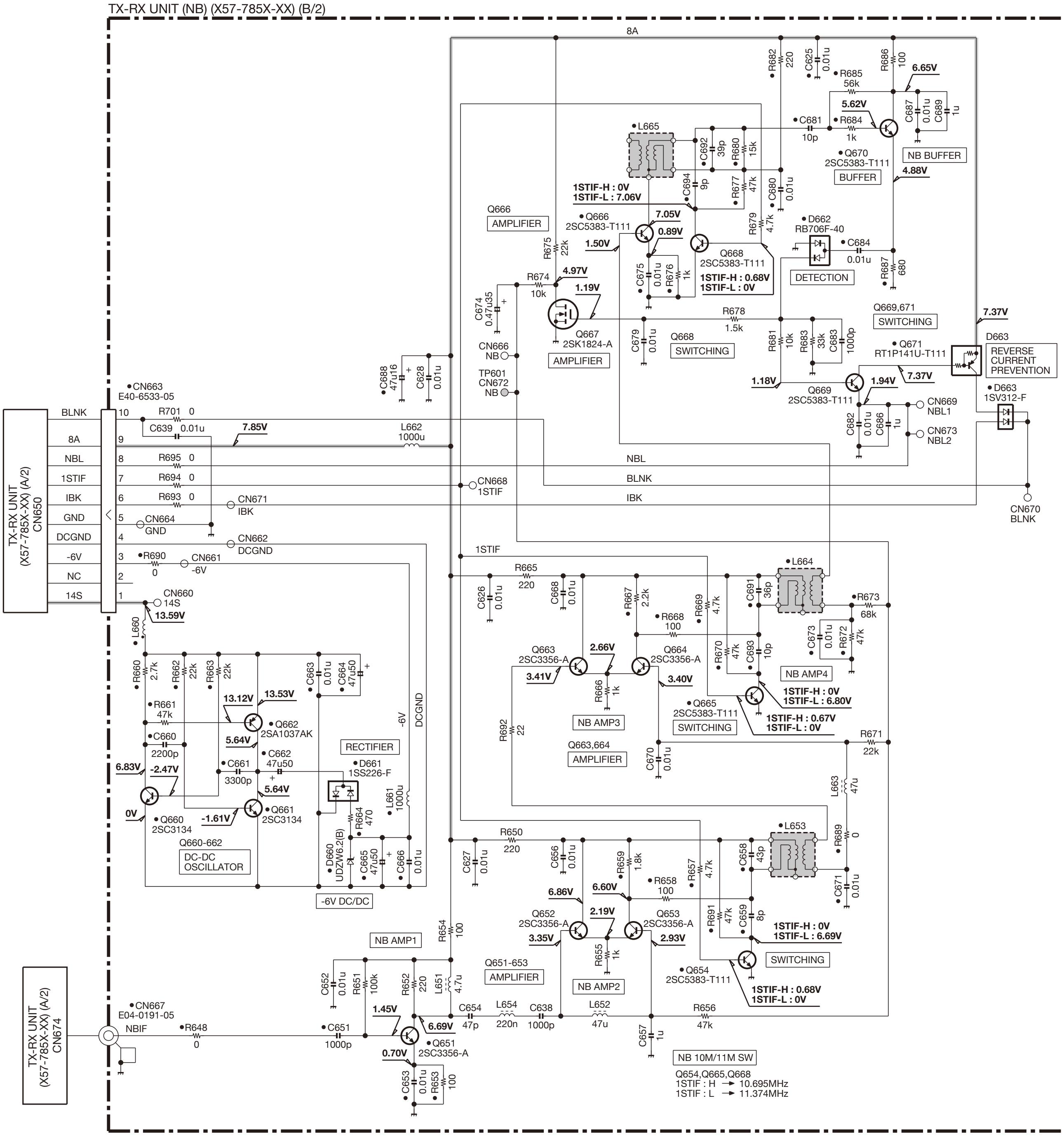
TS-590S SCHEMATIC DIAGRAM

TX-RX UNIT (X57-785X-XX) (A/2)



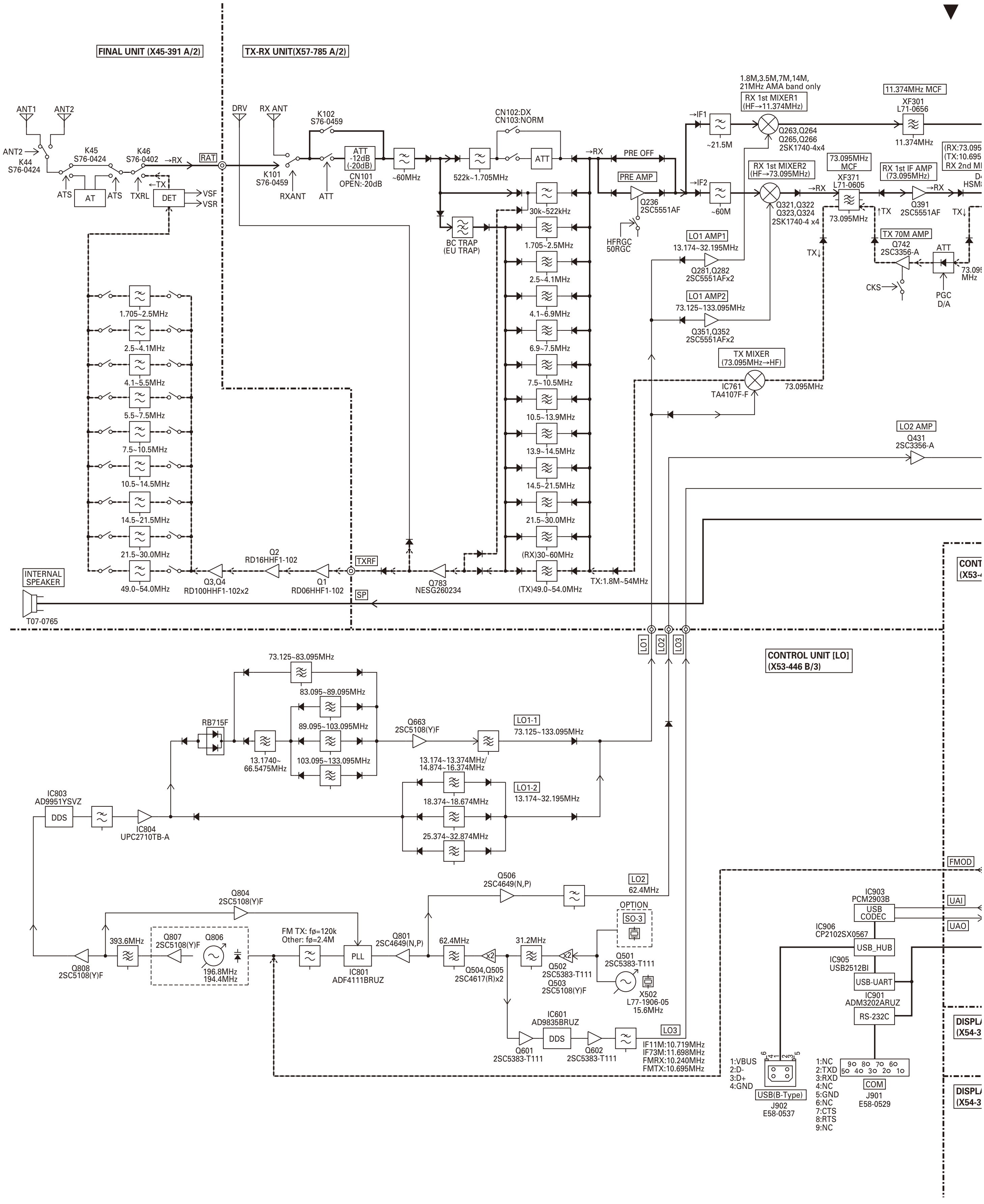
Note : The components marked with a dot (•) are parts of layer 1.

SCHEMATIC DIAGRAM TS-590S

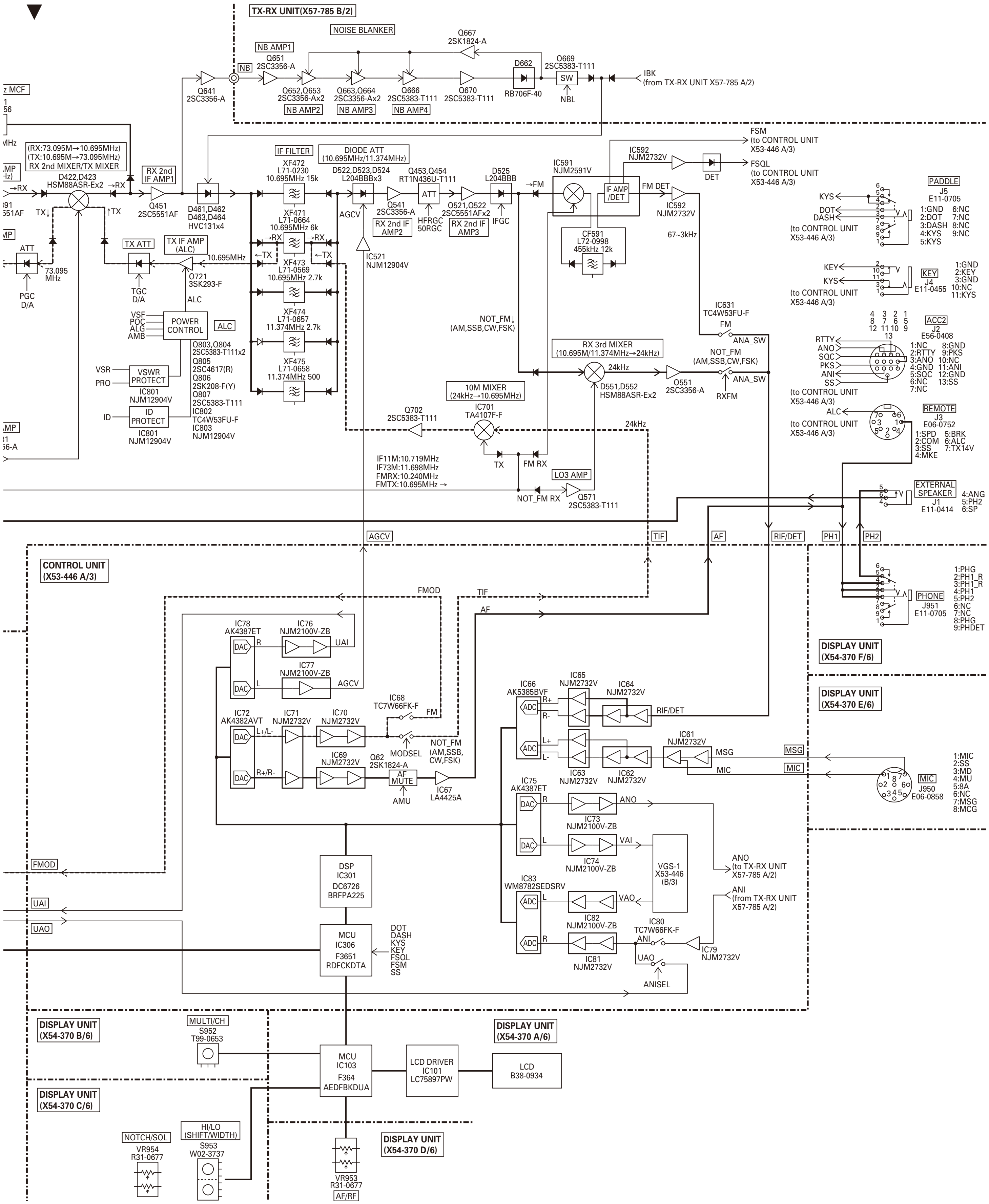


Note : The components marked with a dot (•) are parts of layer 1.

BLOCK DIAGRAM

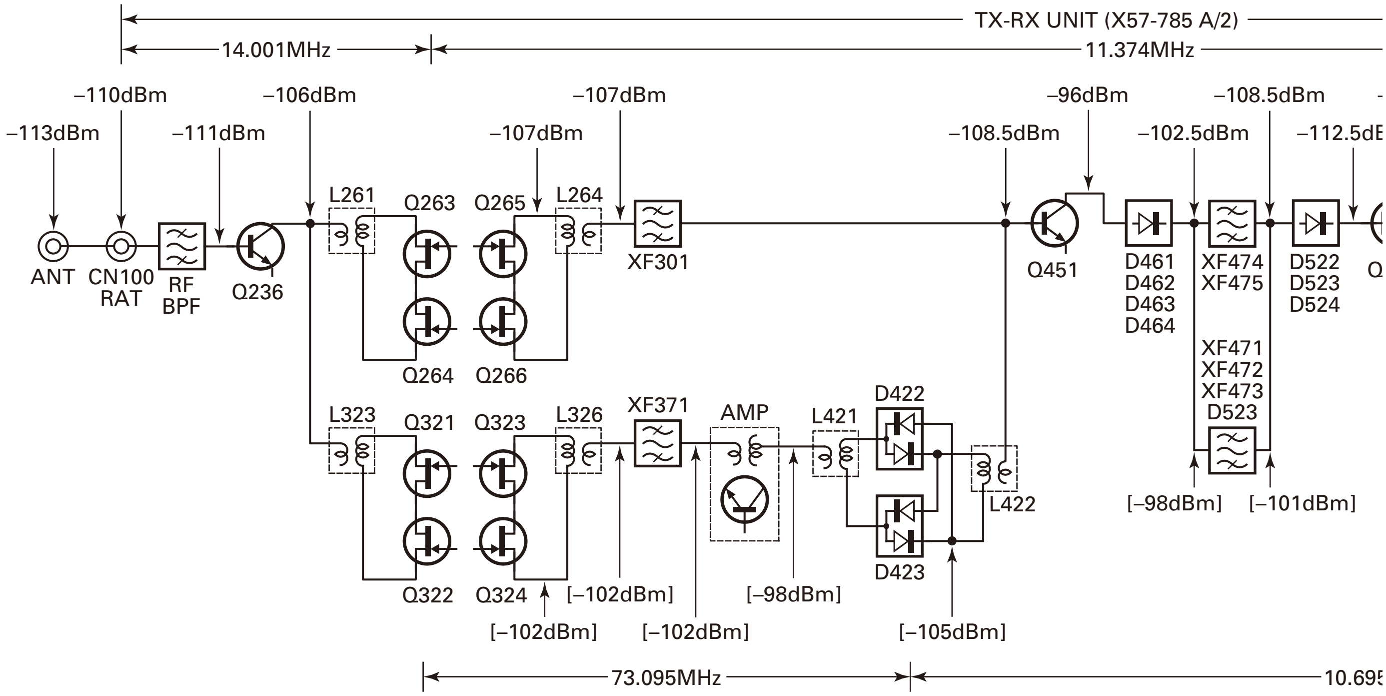


BLOCK DIAGRAM



LEVEL DIAGRAM

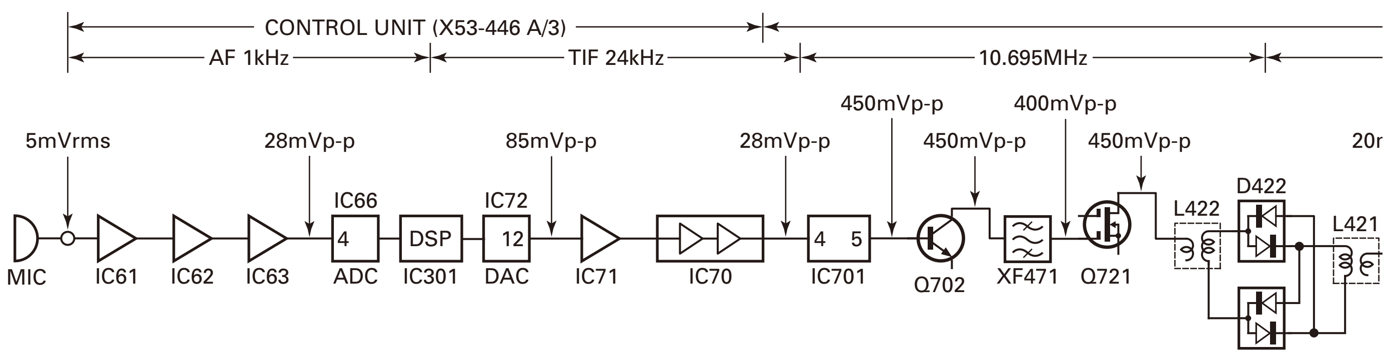
Receiver Section



Measurement condition
Frequency: 14.0MHz
PRE AMP: ON
ANT input: –113dBm/0.501µV
AF output: 0.63V/8Ω, 1kHz
Mode: USB
The values in parentheses ( ) are those in FM mode
The values in parentheses [ ] are those in RX2 (IF1: 73.095MHz)

Input –113dBm from the antenna, set AF VOLUME so that AF output is 0.63Vrms, and measure the signal level at each par
The AF section is measured with an oscilloscope and the other parts are measured with an RF voltmeter.

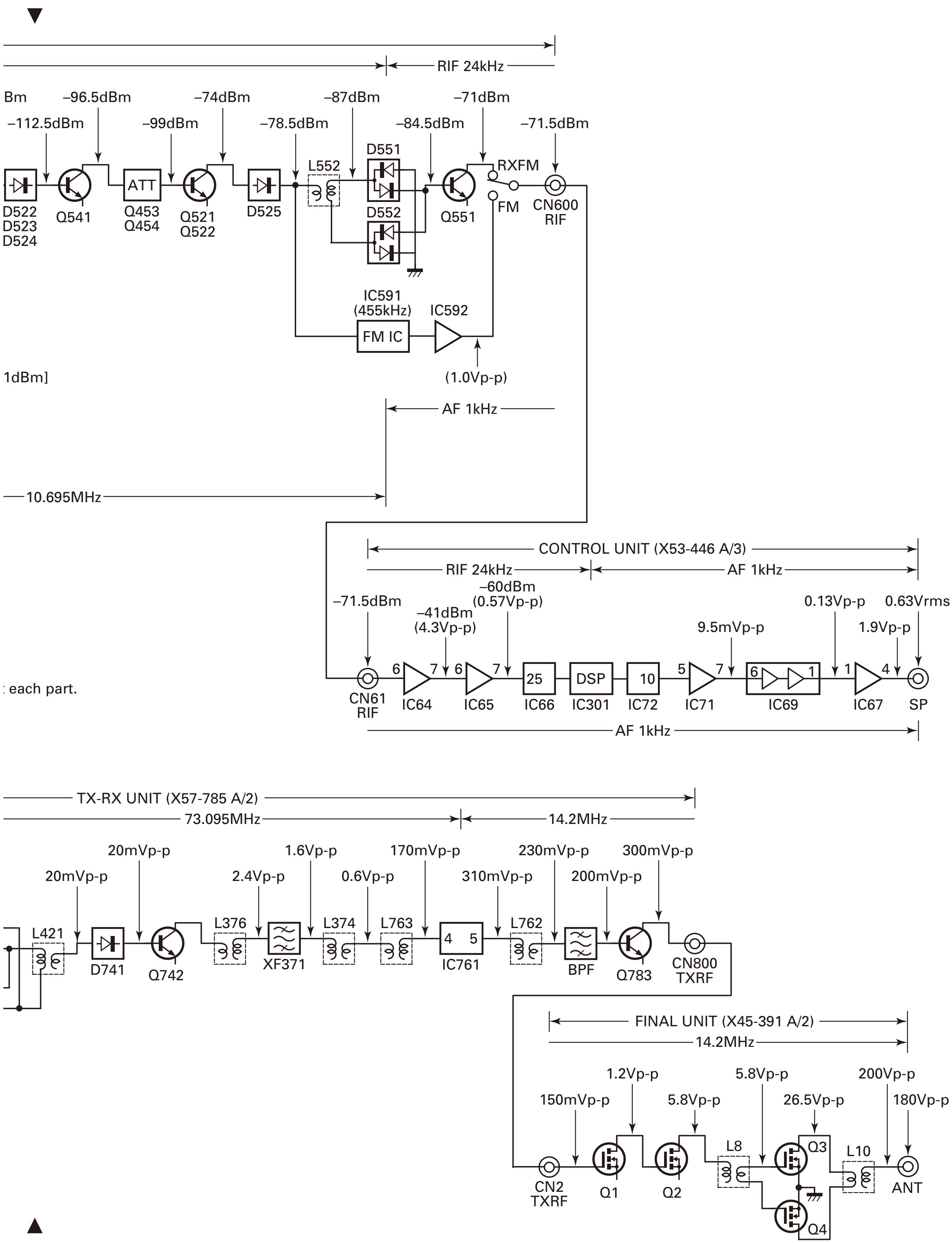
Transmitter Section



Measurement condition
Frequency: 14.2MHz
Mode: USB
MIC input: 1kHz/5mV
Output power: 100W
MIC level: ALC zone maximum

Audio frequency section is measured by the AF voltmeter or oscilloscope.
Radio frequency section is measured by high impedance RF voltmeter.

LEVEL DIAGRAM



OPTIONAL ACCESSORIES

PS-60 (DC Power Supply)

■ External View

ARCP-590 (Radio Control Program)

ARHP-590 (Radio Host Program)

ARUA-10 (USB Audio Controller)

Available free for downloading from the KENWOOD website:
http://www.kenwood.com/i/products/info/amateur/software_download.html

SPECIFICATIONS

General

Mode		J3E (SSB)/ A1A (CW)/ A3E (AM)/ F3E (FM)/ F1B (FSK)
Number of memory channels		110 + 10 (Quick memory channels)
Antenna impedance	160 m ~ 6 m band	50 Ω (with built-in antenna tuner 16.7 ~ 150 Ω)
Supply Voltage		DC 13.8 V±15%
Grounding method		Negative ground
Current	Transmit (max.)	Less than 20.5 A
	Receive (no signal)	Less than 1.5 A
Usable temperature range		–10°C ~ +50°C (+14°F ~ +122°F)
Frequency stability without SO-3	–10°C ~ 50°C	Within ±5 ppm
Frequency stability with SO-3	–10°C ~ 50°C	Within ±0.5 ppm
Dimensions (W x H x D Projections not included)		270 x 96 x 291 mm/ 10.63 x 3.78 x 11.46 inches
Weight		Approx. 7.4 kg/ 16.3 lbs

Transmitter

Frequency range	160 m band		1.8 ~ 2.0 MHz (K type)/ 1.81 ~ 2.0 MHz (E type)
	80 m band		3.5 ~ 4.0 MHz (K type)/ 3.5 ~ 3.8 MHz (E type)
	60 m band		5.1675 MHz, 5.25 ~ 5.45 MHz (K type)
	40 m band		7.0 ~ 7.3 MHz (K type)/ 7.0 ~ 7.2 MHz (E type)
	30 m band		10.1 ~ 10.15 MHz
	20 m band		14.0 ~ 14.35 MHz
	17 m band		18.068 ~ 18.168 MHz
	15 m band		21.0 ~ 21.45 MHz
	12 m band		24.89 ~ 24.99 MHz
	10 m band		28.0 ~ 29.7 MHz
	6 m band		50.0 ~ 54.0 MHz (K type)/ 50.0 ~ 52.0 MHz (E type)
Output power	SSB/ CW/ FSK/ FM	Max.	100 W
		Min.	5 W
	AM	Max.	25 W
		Min.	5 W
Maximum frequency deviation (FM)	Wide		Less than ±5 kHz
	Narrow		Less than ±2.5 kHz
Modulation	SSB		Balanced
	AM		Low power
	FM		Reactance
Spurious emissions	160 m ~ 10 m band		Less than –50 dB
	6 m band		Less than –60 dB
Carrier suppression (SSB)			More than 50 dB
Unwanted sideband suppression (modulation frequency 1.0 kHz)			More than 50 dB
Transmit frequency response			–6 dB: 400 ~ 2600 Hz
XIT shift frequency range			±9.999 kHz
Microphone impedance			600 Ω

SPECIFICATIONS

Receiver

Circuit type		RX1 (1.8/ 3.5/ 7/ 14/ 21 MHz band/ IF band width of 2.7 kHz or less (SSB/CW/FSK))	RX2 (Other)
		Double conversion superheterodyne	Triple conversion superheterodyne
Frequency range		0.13 (VFO 30 kHz) ~ 60 MHz	
Intermediate frequency	1st IF	11.374 MHz	73.095 MHz
	2nd IF	24 kHz	10.695 MHz
	3rd IF	–	24 kHz (except FM)/ 455 kHz (FM)
Sensitivity	SSB/ CW/ FSK (S/N 10 dB)	0.13 ~ 0.522 MHz: Less than 0.5 μV 0.522 ~ 1.705 MHz: Less than 4 μV 1.705 ~ 24.5 MHz: Less than 0.2 μV 24.5 ~ 30.0 MHz: Less than 0.13 μV 50.0 ~ 54.0 MHz: Less than 0.13 μV	
	AM (S/N 10 dB)	0.13 ~ 0.522 MHz: Less than 6.3 μV 0.522 ~ 1.705 MHz: Less than 31.6 μV 1.705 ~ 24.5 MHz: Less than 2 μV 24.5 ~ 30.0 MHz: Less than 1.3 μV 50.0 ~ 54.0 MHz: Less than 1.3 μV	
	FM (12 dB SINAD)	28.0 ~ 30.0 MHz: Less than 0.22 μV 50.0 ~ 54.0 MHz: Less than 0.22 μV	
Squelch sensitivity	SSB/ CW/ FSK/ AM	0.13 ~ 0.522 MHz: Less than 5.6 μV 0.522 ~ 1.705 MHz: Less than 18.0 μV 1.705 ~ 30.0 MHz: Less than 1.8 μV 50.0 ~ 54.0 MHz: Less than 1.1 μV	
	FM	28.0 ~ 30.0 MHz: Less than 0.2 μV 50.0 ~ 54.0 MHz: Less than 0.2 μV	
Selectivity	SSB	More than 2.2 kHz (–6 dB), Less than 4.4 kHz (–60 dB)	
	CW/ FSK	More than 500 Hz (–6 dB), Less than 1.2 kHz (–60 dB)	
	AM	More than 6.0 kHz (–6 dB), Less than 12.0 kHz (–50 dB)	
	FM	More than 12.0 kHz (–6 dB), Less than 25.0 kHz (–50 dB)	
Spurious response	Image Ratio	More than 70 dB	
	IF Rejection	More than 70 dB	
Notch filter attenuation	Auto	More than 60 dB	
	Manual	More than 70 dB	
Beat cancel attenuation (at 1 kHz)		More than 40 dB	
Audio output (8 Ω,10% distortion)		More than 1.5 W	
Audio output impedance (EXT.SP)		8 Ω	
RIT shift frequency range		±9.999 kHz	

Specifications are subject to change without notice due to advancements in technology.

MEMO

TS-590S

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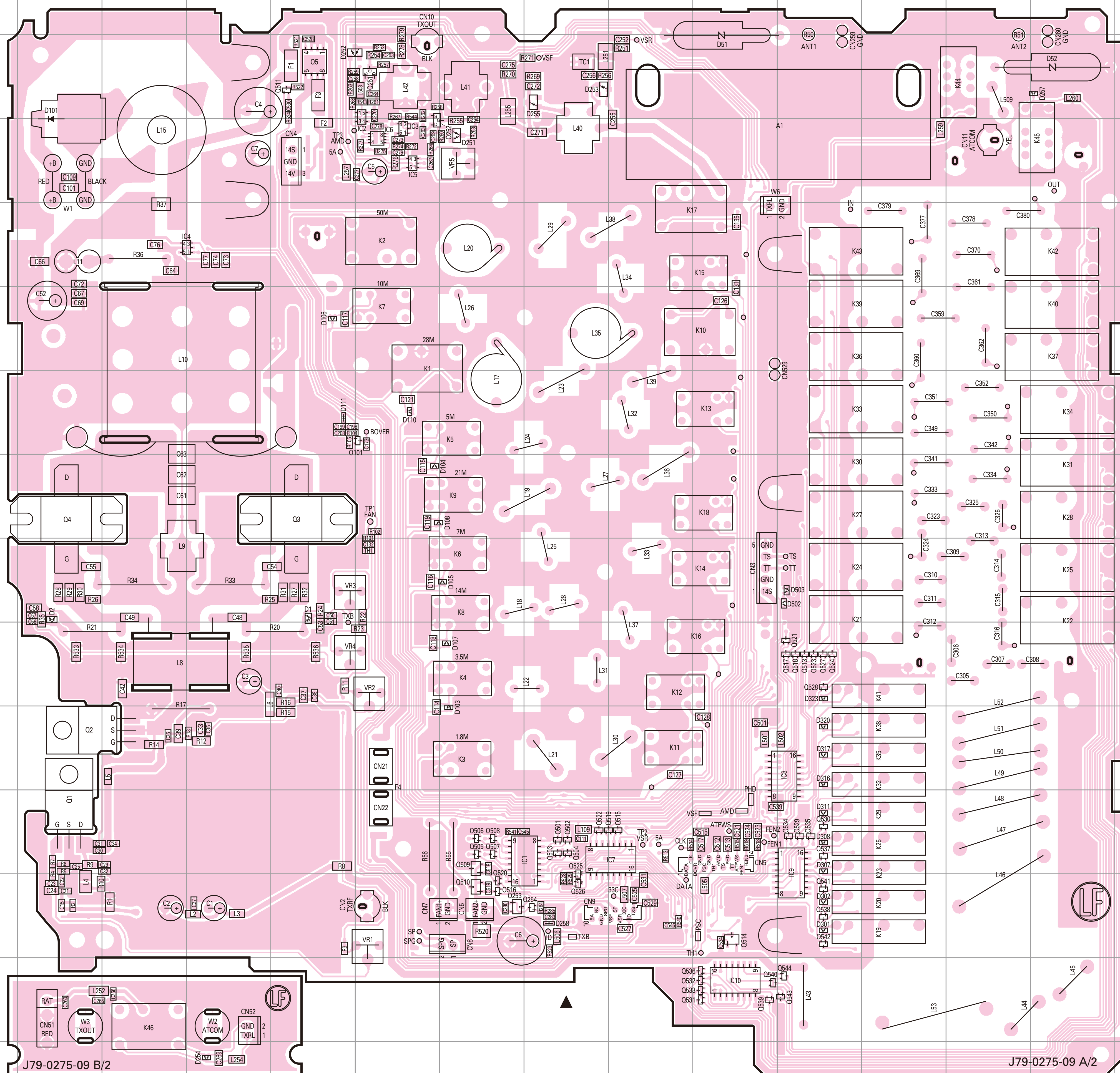
Kenwood Electronics Singapore Pte Ltd

1 Ang Mo Kio Street 63, Singapore 569110

TS-590S PC BOARD

FINAL UNIT
(X45-391X-XX)
0-11: K 2-71: E
Component side view
(J79-0275-09)



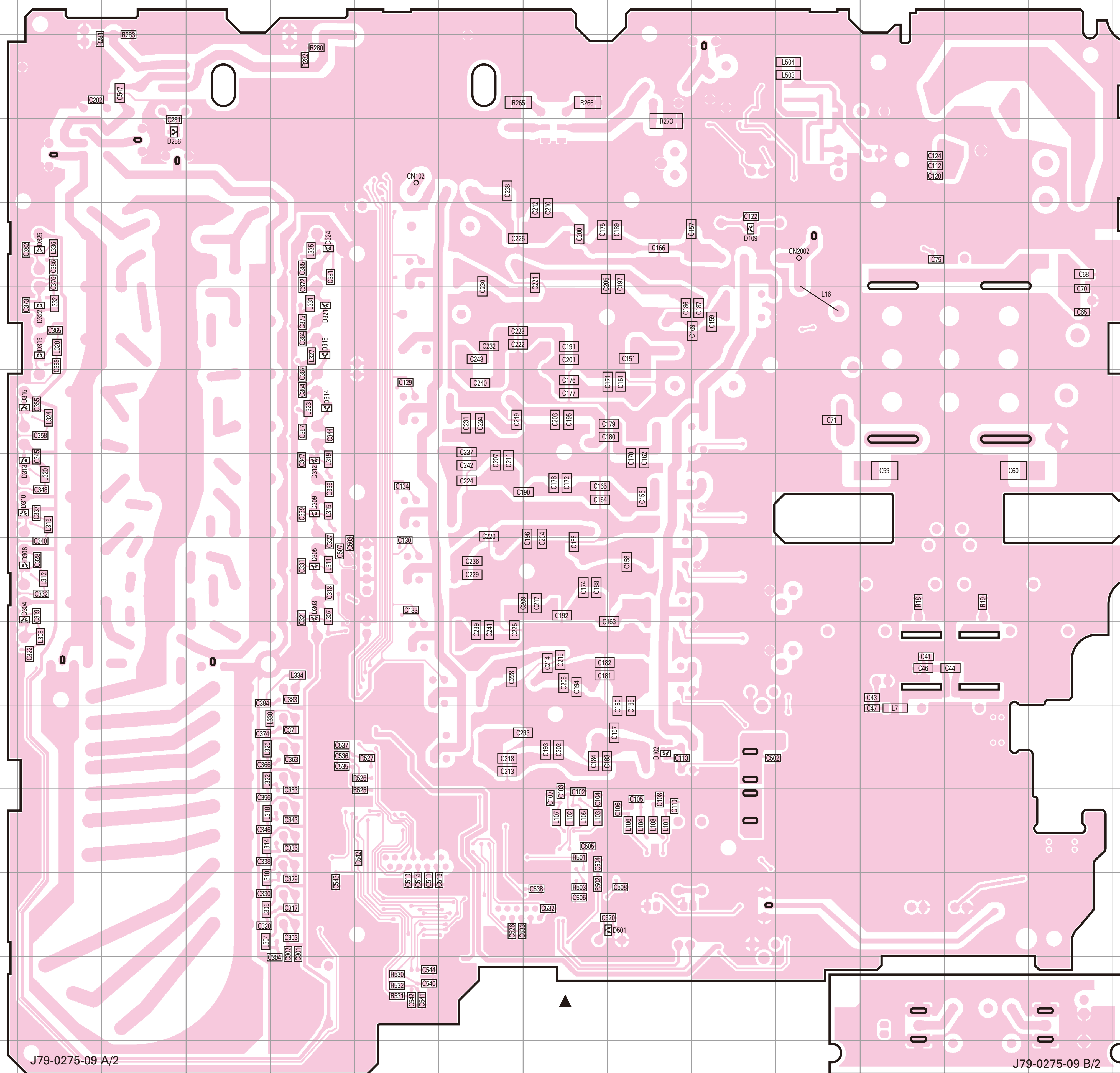
Ref. No.	Address	Ref. No.	Address
IC1	11J	Q529	11M
IC2	2H	Q530	11M
IC3	3H	Q531	13L
IC4	4E	Q532	13L
IC5	3H	Q533	13L
IC6	3H	Q534	11M
IC7	11K	Q535	11M
IC8	10M	Q536	13L
IC9	11M	Q537	11M
IC10	13L	Q538	12M
Q1	11D	Q539	13L
Q2	10D	Q540	13L
Q3	7G	Q541	12M
Q4	7D	Q542	12M
Q5	2G	Q543	13M
Q101	6H	Q544	13M
Q251	2H	D1	8G
Q252	3H	D2	8D
Q253	12I	D51	2L
Q254	12J	D52	2P
Q501	11J	D101	2D
Q502	11J	D103	10I
Q503	11J	D104	7H
Q504	11J	D105	8I
Q505	11I	D106	5G
Q506	11I	D107	9I
Q507	11I	D108	7H
Q508	11I	D110	6H
Q509	11I	D111	6G
Q510	12I	D251	3I
Q511	2G	D252	2G
Q513	9M	D253	2J
Q514	12L	D254	14F
Q515	11K	D255	2J
Q516	12I	D257	2P
Q517	9M	D258	12J
Q518	9M	D301	12M
Q519	11K	D302	12M
Q520	12I	D307	11M
Q521	9M	D308	11M
Q522	11J	D311	11M
Q523	9M	D316	10M
Q524	9M	D317	10M
Q525	12J	D320	10M
Q526	12J	D323	9M
Q527	9M	D502	8M
Q528	9M	D503	8M

TS-590S PC BOARD

FINAL UNIT
(X45-391X-XX)
0-11: K 2-71: E
Foil side view
(J79-0275-09)

PC BOARD TS-590S

FINAL UNIT
(X45-391X-XX)
0-11: K 2-71: E
Foil side view
(J79-0275-09)



Ref. No.	Address
D102	10K
D109	4L
D256	3E
D303	8G
D304	8D
D305	8G
D306	8D
D309	7G
D310	7D
D312	7G
D313	7D
D314	6G
D315	6D
D318	5G
D319	5D
D321	5G
D322	5D
D324	4G
D325	4D
D501	12K

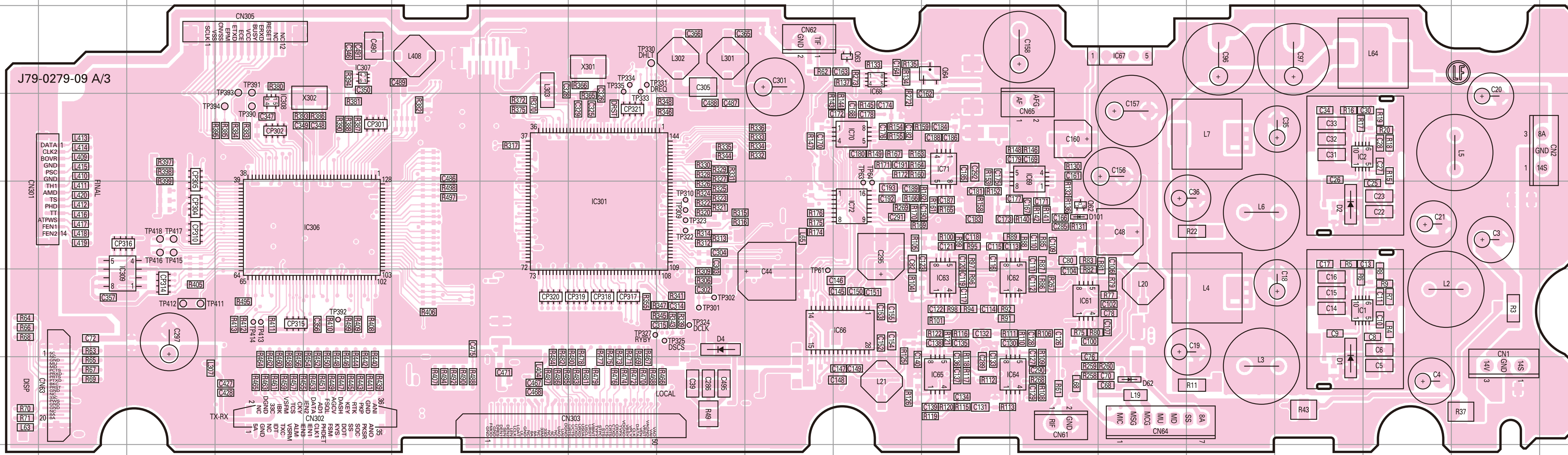
Component side
Layer 1
Layer 2
Foil side

TS-590S PC BOARD

PC BOARD TS-590S

CONTROL UNIT (X53-446X-XX) (A/3) 0-11: K 2-71: E
Component side view (J79-0279-09 A/3)

CONTROL UNIT (X53-446X-XX) (A/3) 0-11: K 2-71: E
Component side view (J79-0279-09 A/3)



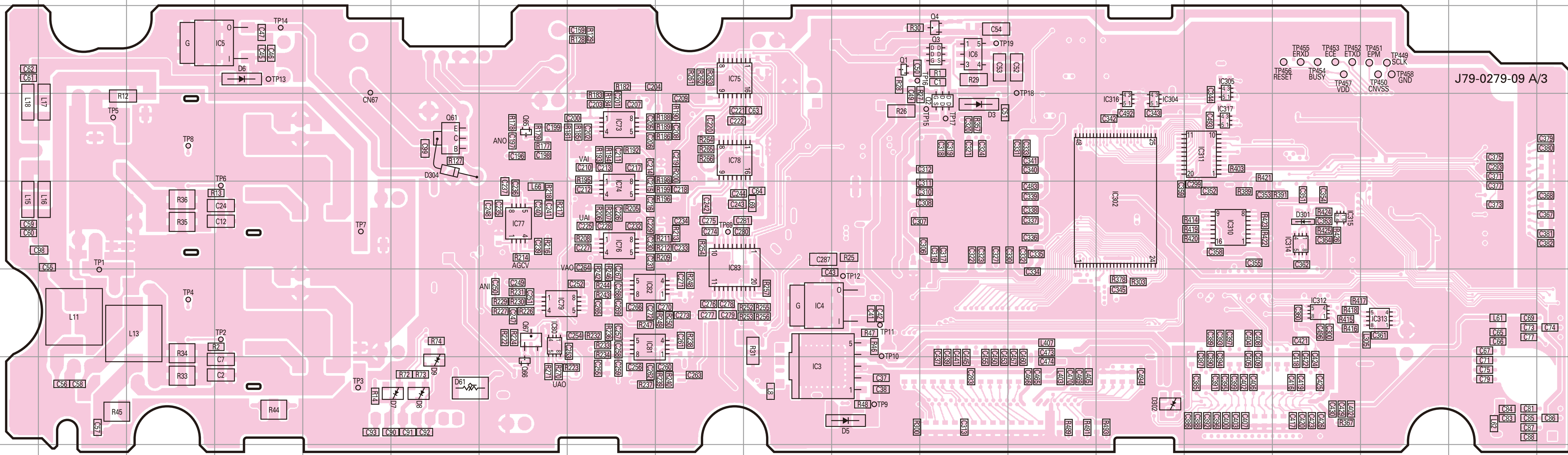
Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC1	6P	IC69	4M	Q63	3K
IC2	4P	IC70	4K	Q64	3L
IC61	6M	IC71	4L	D1	7P
IC62	6M	IC72	5K	D2	5P
IC63	6L	IC301	5H	D4	6I
IC64	7M	IC306	5E	D62	7N
IC65	7L	IC307	3E	D101	5M
IC66	6K	IC308	4D		
IC67	3N	IC309	6B		
IC68	3K	Q62	5M		

Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

PC BOARD TS-590S

CONTROL UNIT (X53-446X-XX) (A/3) 0-11: K 2-71: E
Foil side view (J79-0279-09 A/3)

CONTROL UNIT (X53-446X-XX) (A/3) 0-11: K 2-71: E
Foil side view (J79-0279-09 A/3)



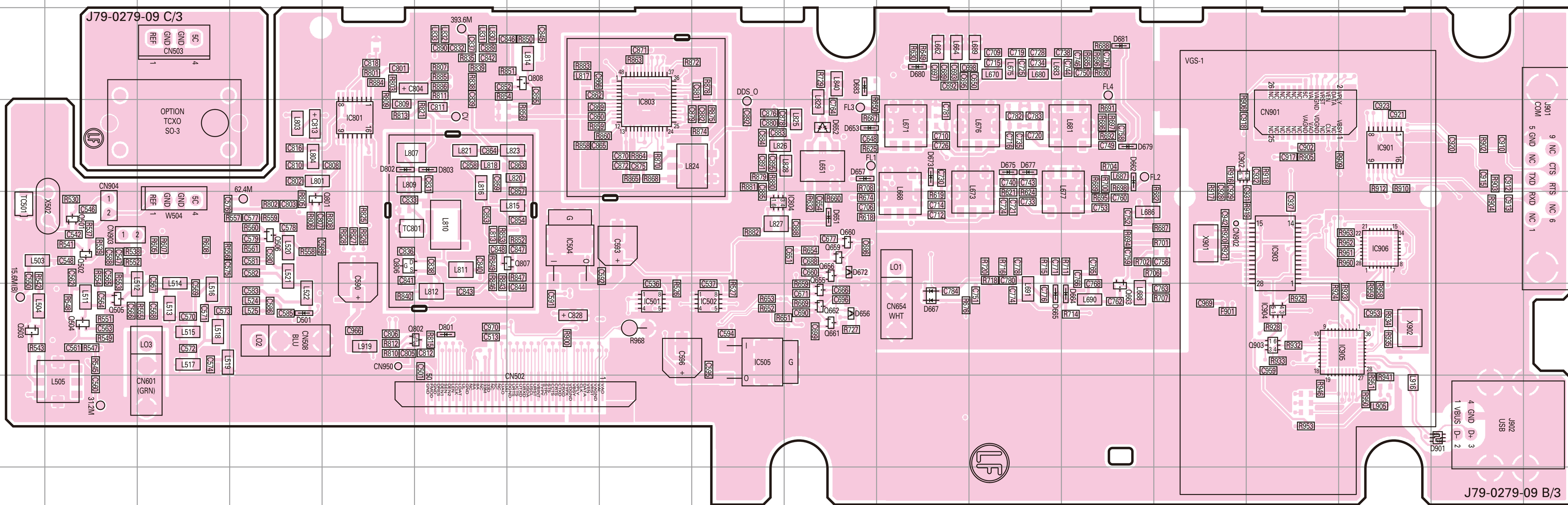
Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC3	7J	IC80	6G	IC314	5P	Q67	6G
IC4	6J	IC81	6H	IC315	5P	D3	4L
IC5	3D	IC82	6H	IC316	4N	D5	7K
IC6	3L	IC83	5I	IC317	4O	D6	3D
IC73	4H	IC302	5N	Q1	3K	D7	7F
IC74	5H	IC304	4N	Q2	4L	D8	7F
IC75	3I	IC305	3O	Q3	3L	D9	7F
IC76	5H	IC310	5O	Q4	3L	D61	7F
IC77	5G	IC311	4O	Q61	4F	D301	5P
IC78	4I	IC312	6P	Q65	4G	D302	7N
IC79	6G	IC313	6Q	Q66	7G	D304	4F

PC BOARD TS-590S

CONTROL UNIT (X53-446X-XX) (B,C/3) 0-11: K 2-71: E
Component side view (J79-0279-09 B,C/3)

CONTROL UNIT (X53-446X-XX) (B,C/3) 0-11: K 2-71: E
Component side view (J79-0279-09 B,C/3)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC501	6H	IC905	6P	Q660	5J	D652	4J	D677	4L
IC502	6I	IC906	5P	Q661	6J	D653	4J	D679	4M
IC504	5G	Q501	5B	Q662	6J	D656	5J	D680	3K
IC505	6I	Q502	5B	Q663	6M	D657	4J	D681	3M
IC801	4E	Q503	6A	Q801	5D	D662	4M	D683	3J
IC803	4H	Q504	6B	Q802	6F	D664	6M	D801	6F
IC804	5I	Q505	6B	Q806	5E	D665	6L	D802	4E
IC901	4P	Q506	5D	Q807	5G	D667	6K	D803	4F
IC902	4N	Q655	6J	Q808	3G	D672	5J	D901	7Q
IC903	5O	Q656	5J	D501	6D	D673	4K		
IC904	6O	Q659	5J	D651	5J	D675	4L		

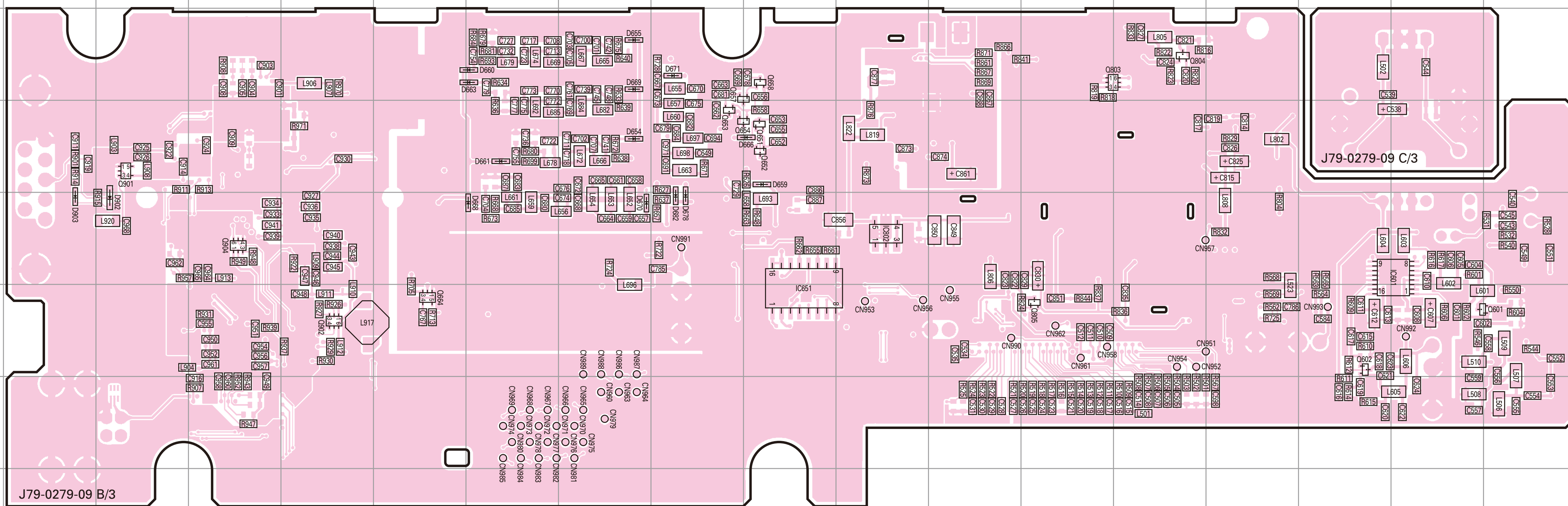
Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

TS-590S PC BOARD

PC BOARD TS-590S

CONTROL UNIT (X53-446X-XX) (B,C/3) 0-11: K 2-71: E
Foil side view (J79-0279-09 B,C/3)

CONTROL UNIT (X53-446X-XX) (B,C/3) 0-11: K 2-71: E
Foil side view (J79-0279-09 B,C/3)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC601	5Q	Q664	6F	D661	4G
IC651	6J	Q803	3M	D663	3G
IC802	5K	Q804	3N	D666	4J
Q601	6Q	Q805	6M	D668	5G
Q602	6P	Q901	4C	D669	3H
Q651	4J	Q902	6E	D670	5H
Q652	4J	Q904	5D	D671	3I
Q653	4I	D654	4H	D678	5I
Q654	4I	D655	3H	D682	5I
Q657	3I	D659	4J	D902	5C
Q658	3J	D660	3G	D903	5B

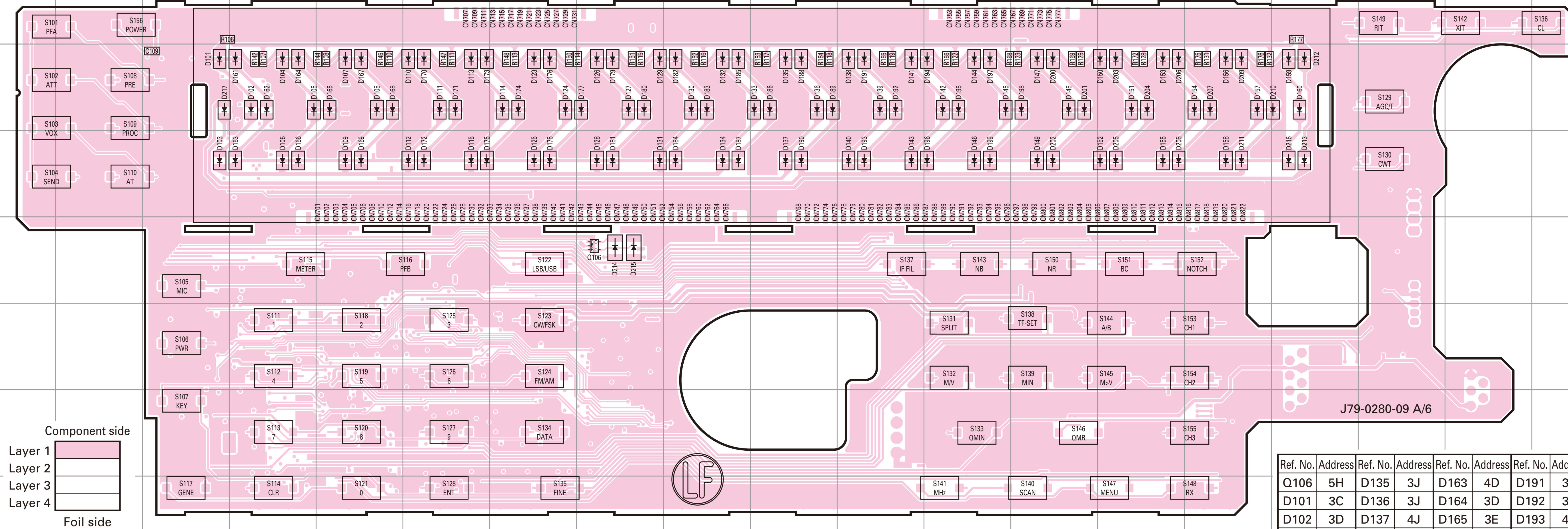
Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

TS-590S PC BOARD

PC BOARD TS-590S

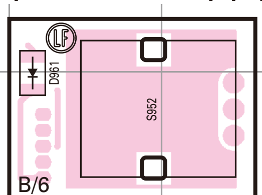
DISPLAY UNIT (X54-3700-00) (A/6): DISPLAY
Component side view (J79-0280-09 A/6)

DISPLAY UNIT (X54-3700-00) (A/6): DISPLAY
Component side view (J79-0280-09 A/6)

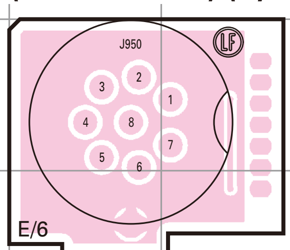


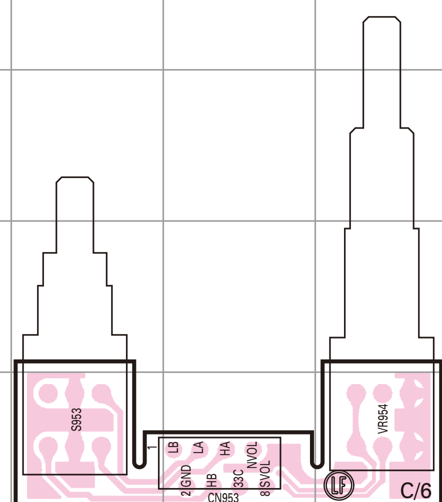
Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
Q106	5H	D135	3J	D163	4D	D191	3K
D101	3C	D136	3J	D164	3D	D192	3K
D102	3D	D137	4J	D165	3E	D193	4K
D103	4C	D138	3K	D166	4D	D194	3L
D104	3D	D139	3K	D167	3E	D195	3L
D105	3D	D140	4K	D168	3E	D196	4L
D106	4D	D141	3K	D169	4E	D197	3L
D107	3E	D142	3L	D170	3F	D198	3M
D108	3E	D143	4K	D171	3F	D199	4L
D109	4E	D144	3L	D172	4F	D200	3M
D110	3F	D145	3L	D173	3F	D201	3M
D111	3F	D146	4L	D174	3G	D202	4M
D112	4F	D147	3M	D175	4F	D203	3N
D113	3F	D148	3M	D176	3G	D204	3N
D114	3G	D149	4M	D177	3H	D205	4N
D115	4F	D150	3N	D178	4G	D206	3N
D123	3G	D151	3N	D179	3H	D207	3O
D124	3G	D152	4N	D180	3H	D208	4N
D125	4G	D153	3N	D181	4H	D209	3O
D126	3H	D154	3O	D182	3I	D210	3P
D127	3H	D155	4N	D183	3I	D211	4O
D128	4H	D156	3O	D184	4I	D212	3P
D129	3H	D157	3O	D185	3I	D213	4P
D130	3I	D158	4O	D186	3J	D214	5H
D131	4H	D159	3P	D187	4I	D215	5H
D132	3I	D160	3P	D188	3J	D216	4P
D133	3J	D161	3D	D189	3J	D217	3C
D134	4I	D162	3D	D190	4J	D961	10B

DISPLAY UNIT
(X54-3700-00) (B/6): MULCH/CH



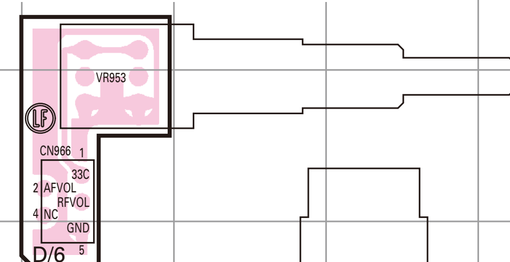
DISPLAY UNIT
(X54-3700-00) (E/6): MIC

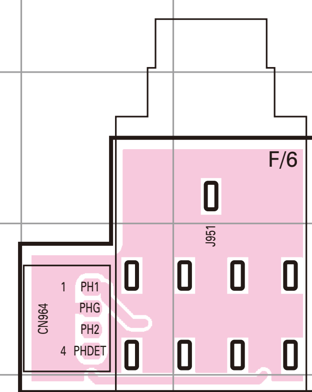




DISPLAY UNIT
(X54-3700-00) (C/6)
: HI/LO (SHIFT/WIDTH), NOTCH/SQL

DISPLAY UNIT
(X54-3700-00) (D/6): AF/RF





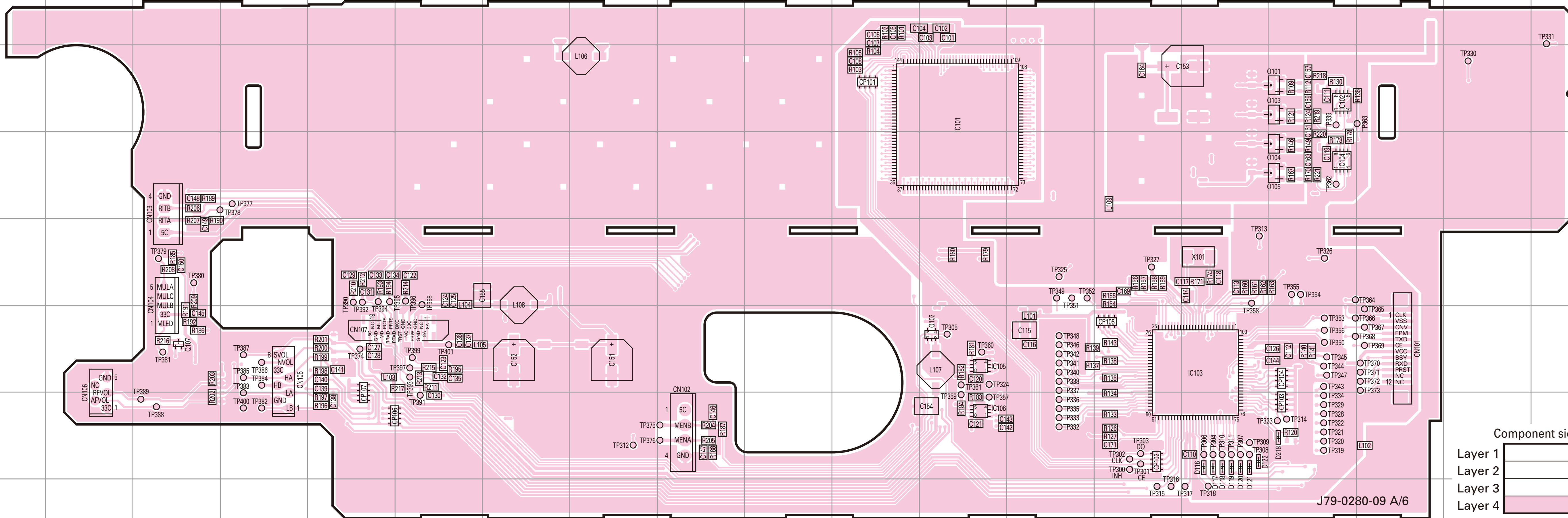
DISPLAY UNIT
(X54-3700-00) (F/6): PHONE

TS-590S PC BOARD

PC BOARD TS-590S

DISPLAY UNIT (X54-3700-00) (A/6): DISPLAY
Foil side view (J79-0280-09 A/6)

DISPLAY UNIT (X54-3700-00) (A/6): DISPLAY
Foil side view (J79-0280-09 A/6)

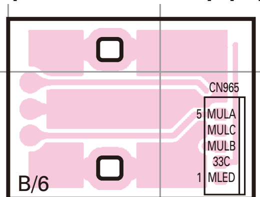


Component side

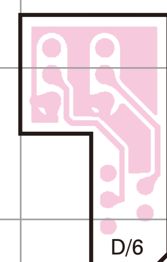
Layer 1
Layer 2
Layer 3
Layer 4

Foil side

DISPLAY UNIT
(X54-3700-00) (B/6): MULCH/CH

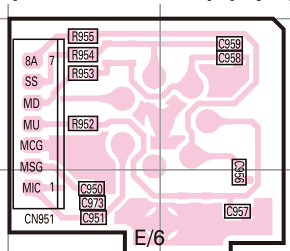


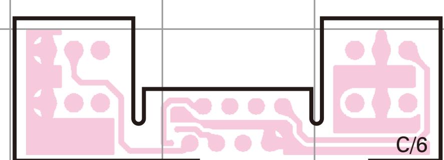
DISPLAY UNIT
(X54-3700-00) (D/6): AF/RF



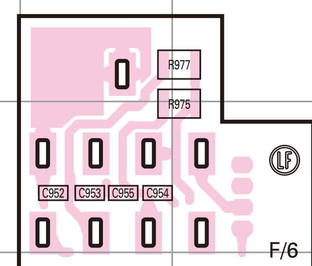
Ref. No.	Address	Ref. No.	Address
IC101	3L	Q105	4P
IC102	3P	Q107	6C
IC103	6O	D116	7O
IC104	4P	D117	7O
IC105	6L	D118	7O
IC106	7L	D119	7O
Q101	3P	D120	7O
Q102	6L	D121	7O
Q103	3P	D122	7O
Q104	4P	D218	7P

DISPLAY UNIT
(X54-3700-00) (E/6): MIC





DISPLAY UNIT
(X54-3700-00) (C/6)
: HI/LO (SHIFT/WIDTH), NOTCH/SQL



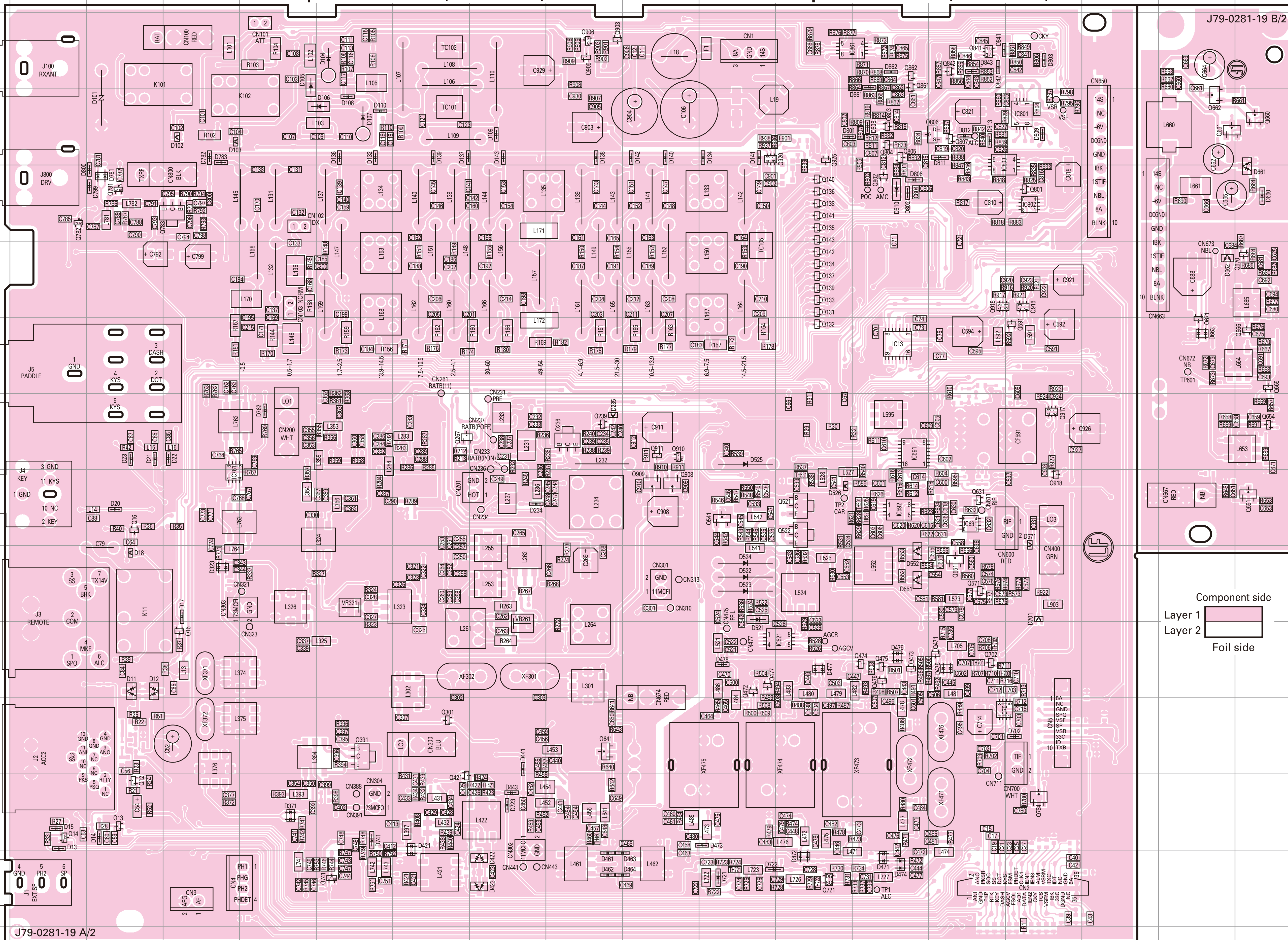
DISPLAY UNIT
(X54-3700-00) (F/6): PHONE

TS-590S PC BOARD

TX-RX UNIT (X57-785X-XX)
0-11: K 2-71: E
Component side view (J79-0281-19)

TX-RX UNIT (X57-785X-XX)
0-11: K 2-71: E
Component side view (J79-0281-19)

PC BOARD TS-590S



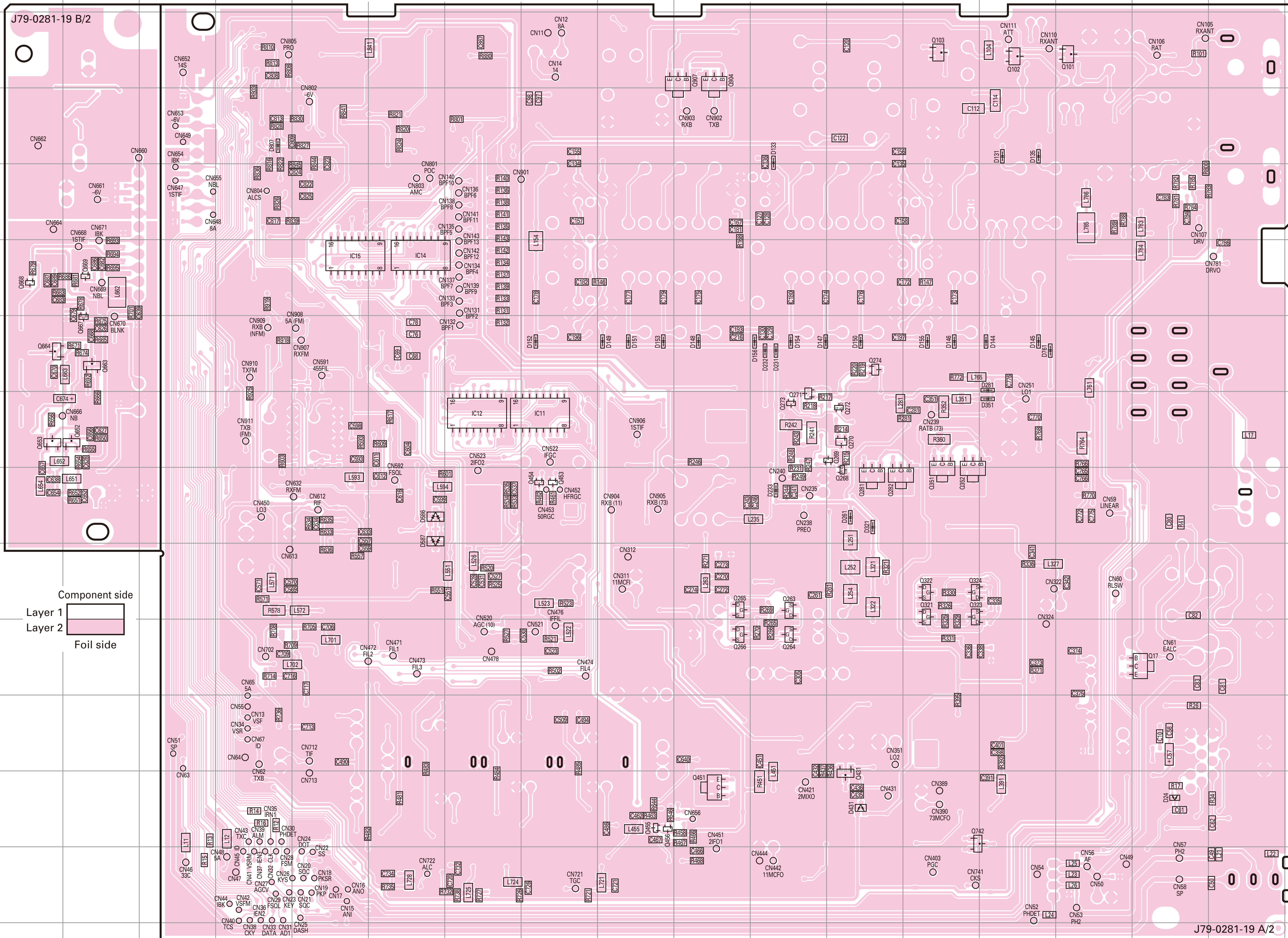
Component side
Layer 1
Layer 2
Foil side

Ref. No.	Address	Ref. No.	Address
IC13	6M	D12	10C
IC521	10L	D13	12B
IC591	7M	D14	12C
IC592	8M	D15	12B
IC631	8N	D17	9D
IC701	11N	D18	9C
IC761	8D	D20	8C
IC801	3O	D21	7C
IC802	4O	D22	7D
IC803	3N	D23	7C
IC861	2L	D101	3C
Q12	12C	D102	3D
Q13	12C	D103	3D
Q14	12B	D104	4F
Q15	10D	D105	2E
Q16	8C	D106	3F
Q131	5L	D107	3F
Q132	6L	D108	3F
Q133	5L	D109	3H
Q134	5L	D110	3F
Q135	4L	D132	3F
Q136	4L	D134	3K
Q137	5L	D136	3F
Q138	4L	D137	3G
Q139	5L	D138	3I
Q140	4L	D139	3G
Q141	4L	D140	3J
Q142	5L	D141	3K
Q143	4L	D142	3J
Q236	7I	D143	3H
Q239	7I	D234	8H
Q267	7G	D235	7I
Q301	11G	D323	9D
Q391	11F	D371	12E
Q421	12G	D421	12G
Q471	10N	D422	13H
Q472	10K	D423	13H
Q473	10M	D441	11H
Q474	10M	D443	12H
Q475	10M	D461	13I
Q476	10M	D462	13I
Q477	10K	D463	13J
Q521	8L	D464	13J
Q522	8L	D471	13M
Q541	8K	D472	13L
Q551	9N	D473	12K
Q571	9N	D474	13M
Q591	6O	D475	10N
Q631	8N	D476	10M
Q641	11I	D477	10L
Q651	8R	D478	10K
Q654	7R	D521	9K
Q660	3R	D522	9K
Q661	3Q	D523	9K
Q662	3Q	D524	9K
Q665	6R	D525	7K
Q666	6R	D526	8L
Q670	5R	D551	9M
Q671	6Q	D552	9M
Q702	10N	D571	8O
Q721	13L	D660	4R
Q741	13F	D661	4R
Q781	4C	D662	5Q
Q782	4B	D663	6Q
Q783	4D	D701	9O
Q784	12O	D702	11O
Q801	4O	D721	13K
Q802	4M	D722	13K
Q803	3M	D723	12H
Q804	3M	D741	12F
Q805	3M	D762	7E
Q806	3N	D781	4C
Q807	3N	D782	3D
Q841	2N	D783	3D
Q842	2N	D799	4C
Q861	2M	D800	4C
Q862	2M	D801	3L
Q903	2I	D802	4M
Q905	2I	D803	2O
Q906	2I	D806	4M
Q908	8J	D808	3M
Q909	8J	D809	3O
Q910	7J	D810	4M
Q911	7J	D811	3N
Q915	5N	D812	3N
Q916	5O	D813	3N
Q917	7O	D841	2N
Q918	8O	D842	2N
Q920	3K	D843	2N
Q925	3L	D861	2M
D11	10C	D862	2M

TS-590S PC BOARD

TX-RX UNIT (X57-785X-XX)
0-11: K 2-71: E
Foil side view (J79-0281-19)

Ref. No.	Address
IC11	7I
IC12	7H
IC14	5G
IC15	5F
Q17	10Q
Q101	2P
Q102	2O
Q103	2N
Q263	9L
Q264	10L
Q265	9K
Q266	10K
Q268	8M
Q269	7M
Q270	7M
Q271	7L
Q272	7M
Q273	7L
Q274	6M
Q281	8M
Q282	8M
Q321	9N
Q322	9N
Q323	9N
Q324	9N
Q351	8N
Q352	8N
Q431	12M
Q451	12K
Q453	8I
Q454	8I
Q455	12J
Q456	12J
Q652	7C
Q653	7B
Q663	6C
Q664	6B
Q667	6C
Q668	5B
Q669	5C
Q742	12N
Q904	2K
Q907	2K
D24	12Q
D131	3O
D133	3L
D135	3O
D144	6O
D145	6O
D146	6N
D147	6L
D148	6K
D149	6J
D150	6M
D151	6J
D152	6I
D153	6J
D154	6L
D155	6N
D156	6L
D231	6L
D232	6L
D233	8L
D261	8M
D281	6O
D321	8M
D351	7O
D431	12M
D586	8G
D587	8G
D761	6O
D807	3E



TX-RX UNIT (X57-785X-XX)
0-11: K 2-71: E
Foil side view (J79-0281-19)

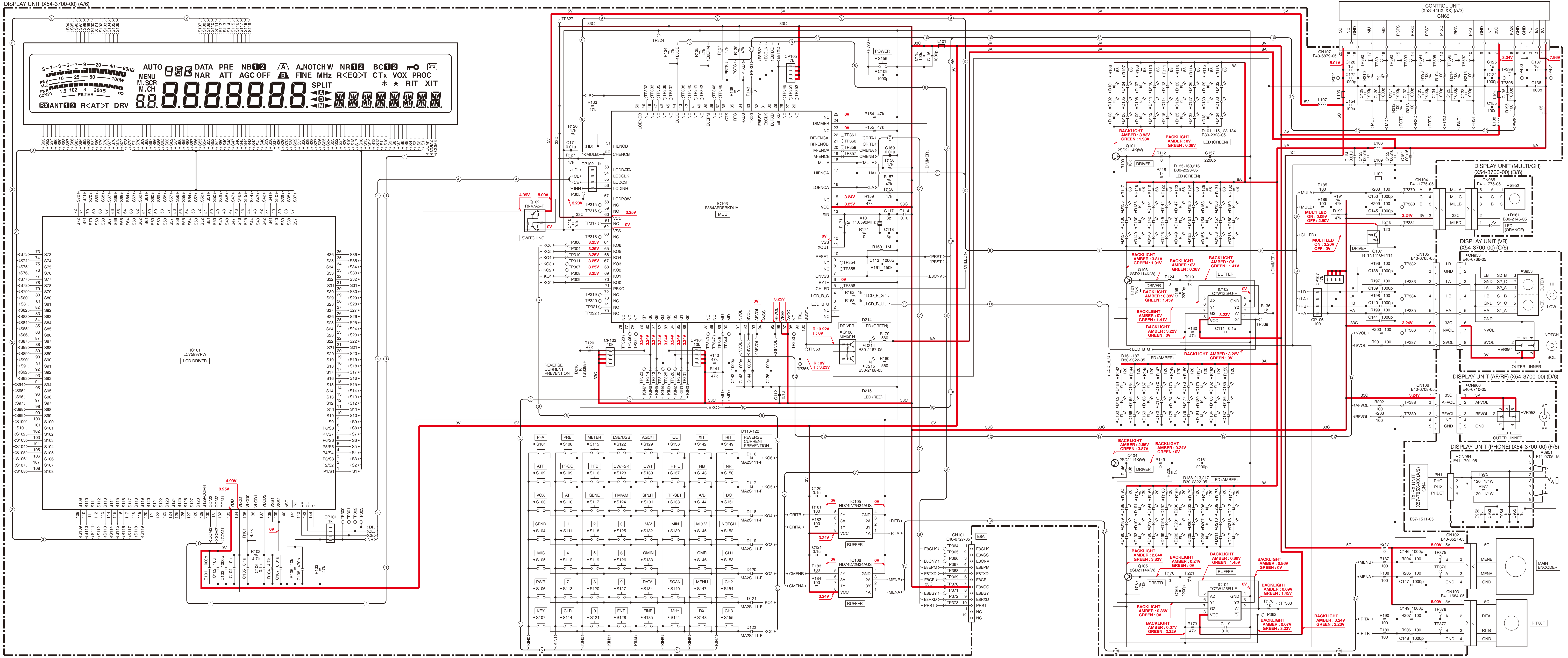
PC BOARD TS-590S

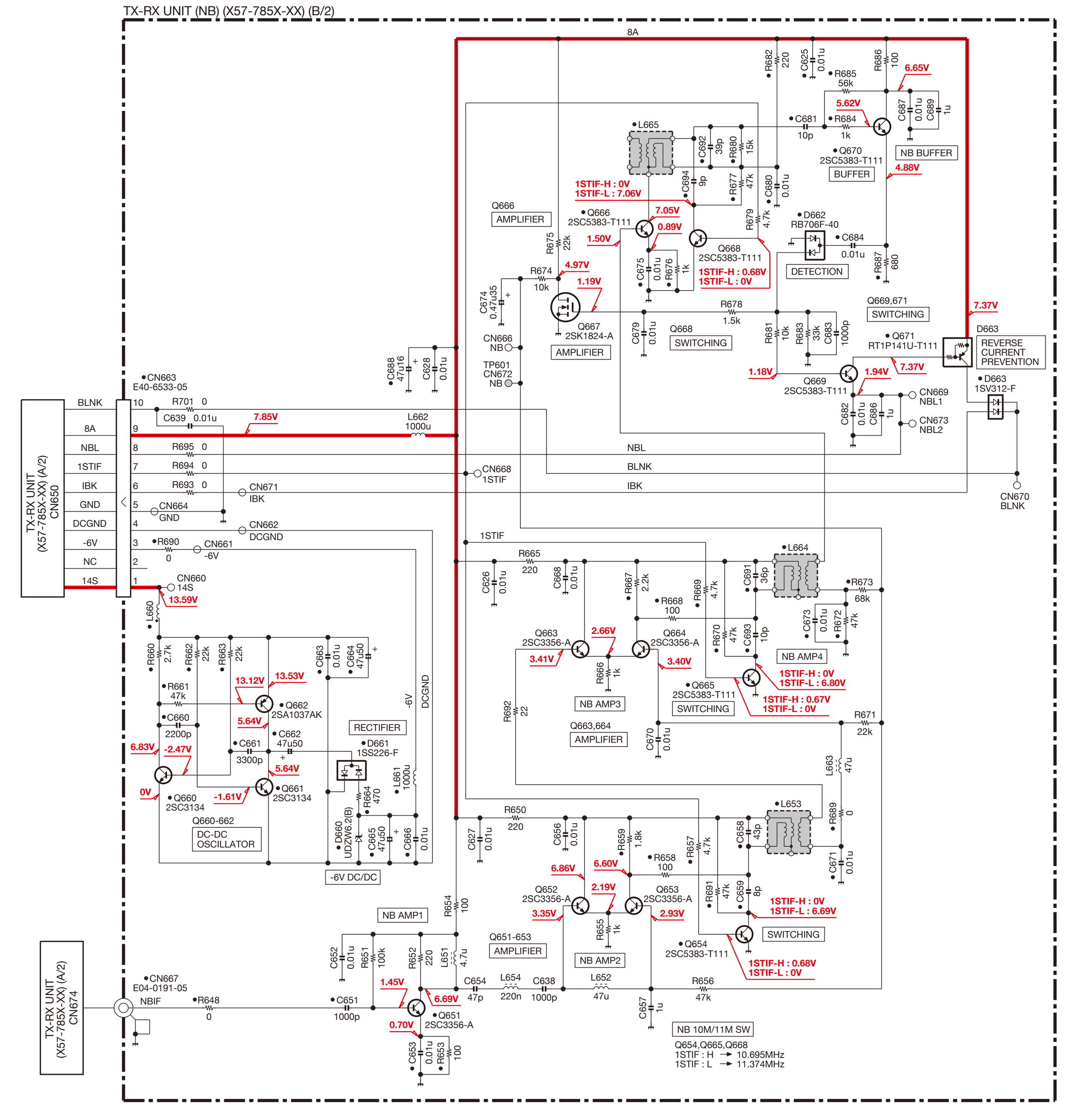
FINAL UNIT (X45-391X-XX) (A/2)
FINAL UNIT (RELAY) (X45-391X-XX) (B/2)

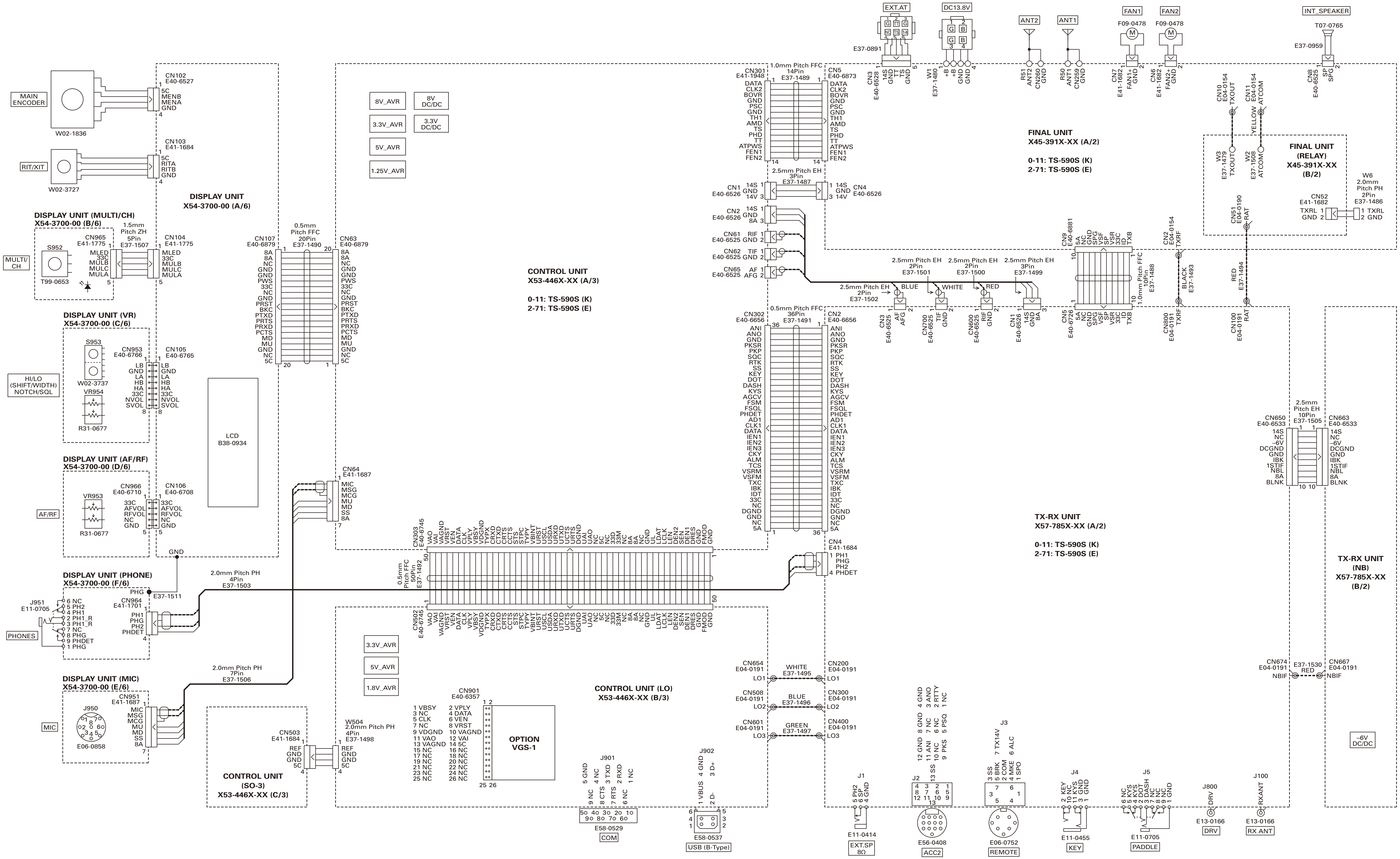
CONTROL UNIT (X53-446X-XX) (A/3)
CONTROL UNIT (LO)
(X53-446X-XX) (B/3)
CN502
TX-RX UNIT
(X57-785X-XX) (A/2)
CN2
FINAL UNIT
(X45-391X-XX) (A/2)
CN5

CONTROL UNIT (LO) (X53-440X-XX) (B/3)
CONTROL UNIT (SO-3) (X53-440X-XX) (C/3)

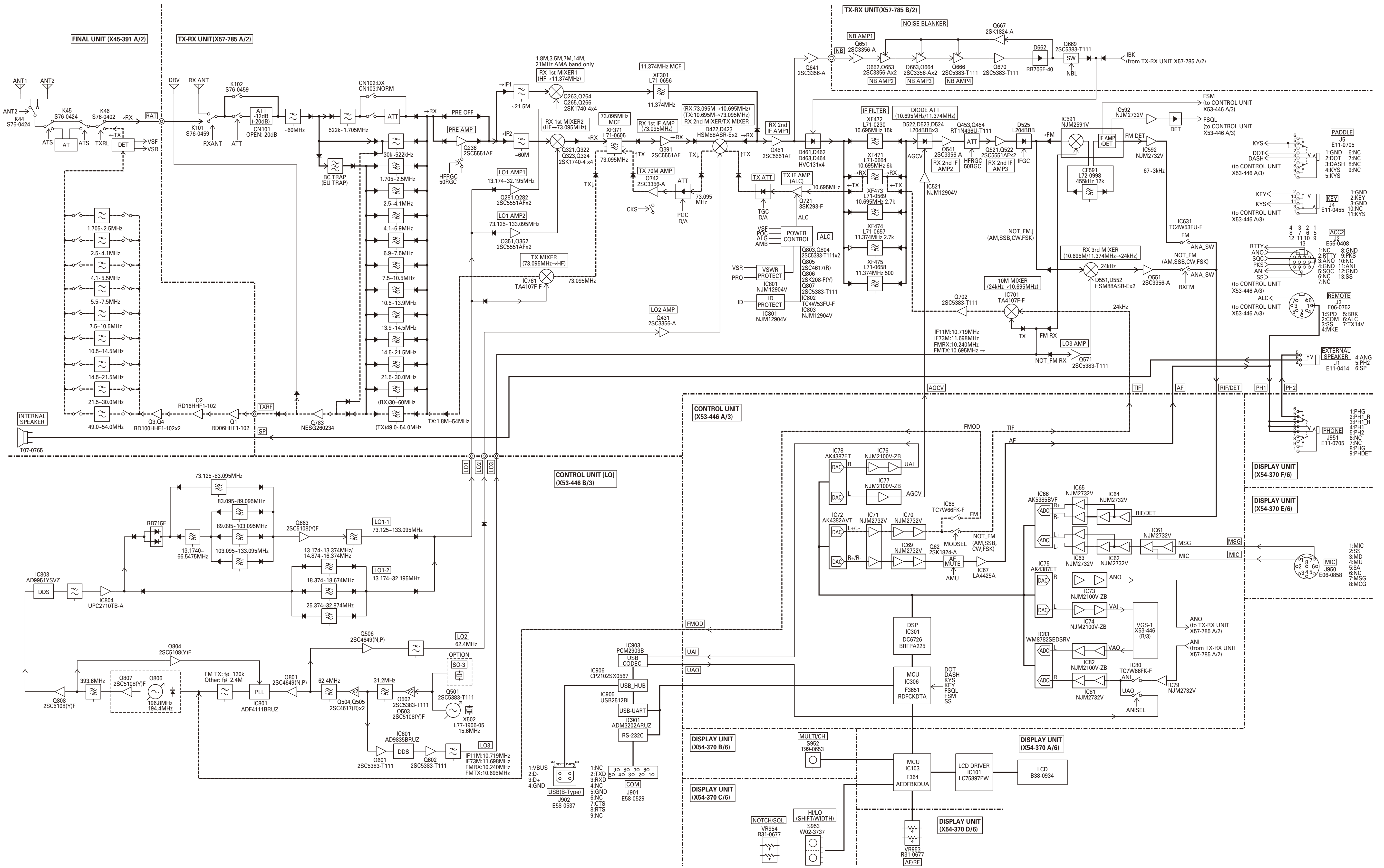
DISPLAY UNIT (X54-3700-00) (A/6)





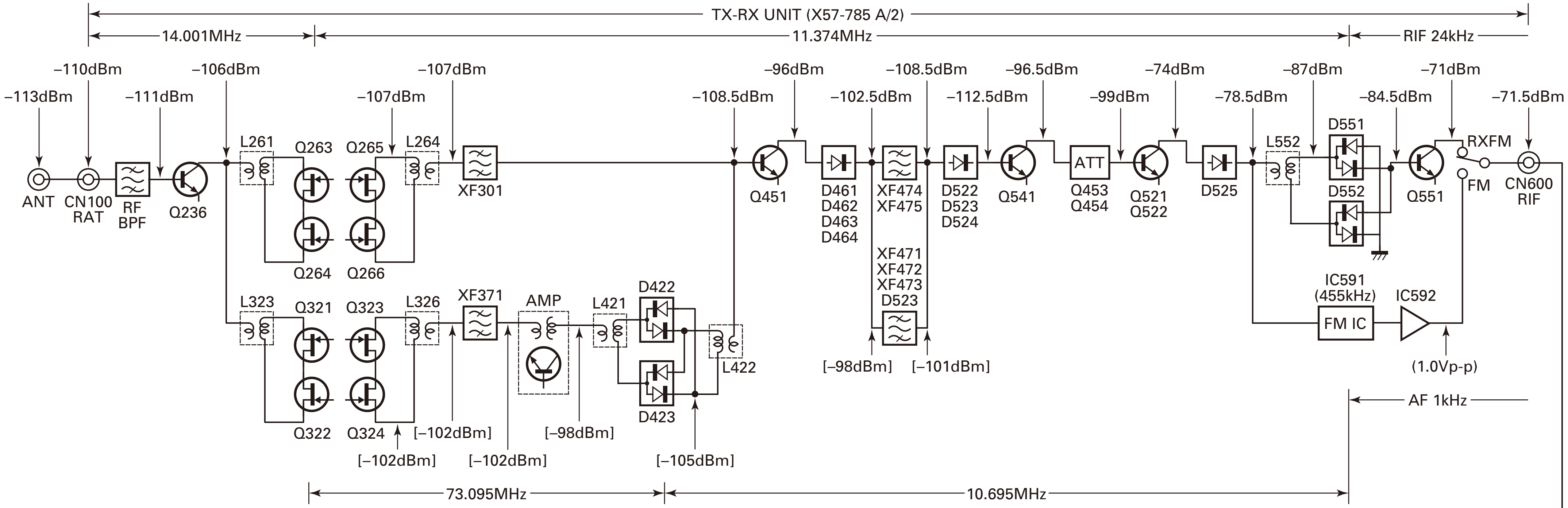


EXT.AT
DC13.8V
ANT2
ANT1
FAN1
FAN2
INT_SPEAKER
F09-0478
T07-0765
E37-0891
E37-0959
MAIN ENCODER
W02-1836
RIT/XIT
W02-3727
CN102
E40-6527
5C
MENB
MENA
GND
CN103
E41-1684
5C
RITA
RITB
GND
DISPLAY UNIT
X54-3700-00 (A/6)
DISPLAY UNIT (MULTI/CH)
X54-3700-00 (B/6)
MULTI/CH
S952
T99-0653
CN965
E41-1775
1.5mm Pitch ZH 5Pin E37-1507
CN104
E41-1775
MLED
33C
MULB
MULC
MULA
DISPLAY UNIT (VR)
X54-3700-00 (C/6)
HI/LO (SHIFT/WIDTH) NOTCH/SQL
S953
W02-3737
VR954
R31-0677
CN953
E40-6766
CN105
E40-6765
LB
GND
LA
HB
HA
33C
NVOL
SVOL
DISPLAY UNIT (AF/RF)
X54-3700-00 (D/6)
AF/RF
VR953
R31-0677
CN966
E40-6710
CN106
E40-6708
33C
AFVOL
RFVOL
NC
GND
DISPLAY UNIT (PHONE)
X54-3700-00 (F/6)
PHONES
J951
E11-0705
6 NC
5 PH2
4 PH1
2 PH1_R
3 PH1_R
7 NC
8 PHG
9 PHDET
1 PHG
CN964
E41-1701
PH1
PHG
PH2
PHDET
E37-1511
2.0mm Pitch PH 4Pin E37-1503
DISPLAY UNIT (MIC)
X54-3700-00 (E/6)
MIC
J950
E06-0858
CN951
E41-1687
MIC
MSG
MCG
MU
MD
SS
8A
2.0mm Pitch PH 7Pin E37-1506
CONTROL UNIT (SO-3)
X53-446X-XX (C/3)
CN503
E41-1684
REF
GND
GND
5C
W504
2.0mm Pitch PH 4Pin E37-1498
8V_AVR
8V DC/DC
3.3V_AVR
3.3V DC/DC
5V_AVR
1.25V_AVR
LCD
B38-0934
CN107
E40-6879
0.5mm Pitch FFC 20Pin E37-1490
CN63
E40-6879
8A
8A
NC
GND
GND
PWS
33C
NC
GND
PRST
BKC
PTXD
PRTS
PRXD
PCTS
MD
MU
GND
NC
5C
CN64
E41-1687
CONTROL UNIT
X53-446X-XX (A/3)
0-11: TS-590S (K)
2-71: TS-590S (E)
CN303
E40-6745
0.5mm Pitch FFC 50Pin E37-1492
CN502
E40-6745
VAO VAI VAGND VRST VEN DATA CLK VPLY VBSY VDGND TYPX CRXD CTXD CRTS CCTS STS STPC TYPY VBINT URST USCL USDA URXD UTXD UCTS URTS DGND UAI UAO NC 5C NC 33D 33M NC 8A 8A NC GND UL LDAT LCLK LEN DEN2 SEN DEN1 DRES FMOD GND
3.3V_AVR
5V_AVR
1.8V_AVR
CONTROL UNIT (LO)
X53-446X-XX (B/3)
CN901
E40-6357
1 VBSY
3 NC
5 CLK
7 NC
9 VDGND
11 VAO
13 VAGND
15 NC
17 NC
19 NC
21 NC
23 NC
25 NC
2 VPLY
4 DATA
6 VEN
8 VRST
10 VAGND
12 VAI
14 5C
16 NC
18 NC
20 NC
22 NC
24 NC
26 NC
OPTION VGS-1
J901
E58-0529
COM
J902
E58-0537
USB (B-Type)
1 VBUS
2 D-
3 D+
4 GND
CN301
E41-1948
1.0mm Pitch FFC 14Pin E37-1489
CN5
E40-6873
DATA
CLK2
BOVR
GND
PSC
GND
TH1
AMD
TS
PHD
TT
ATPWS
FEN1
FEN2
2.5mm Pitch EH 3Pin E37-1487
CN1
E40-6526
14S
GND
14V
CN4
E40-6526
CN2
E40-6526
CN61
E40-6525
RIF
CN62
E40-6525
TIF
CN65
E40-6525
AF
AFG
CN302
E40-6656
0.5mm Pitch FFC 36Pin E37-1491
CN2
E40-6656
ANI ANO GND PKSR PKP SQC RTK SS KEY DOT DASH KYS AGCV FSM FSQL PHDET AD1 CLK1 DATA IEN1 IEN2 IEN3 CKY ALM TCS VSRM VSFM TXC IBK IDT 33C NC DGND GND NC 5A
CN4
E41-1684
PH1
PHG
PH2
PHDET
CN654
E04-0191
LO1
WHITE E37-1495
CN200
E04-0191
CN508
E04-0191
LO2
BLUE E37-1496
CN300
E04-0191
CN601
E04-0191
LO3
GREEN E37-1497
CN400
E04-0191
FINAL UNIT
X45-391X-XX (A/2)
0-11: TS-590S (K)
2-71: TS-590S (E)
FINAL UNIT (RELAY)
X45-391X-XX (B/2)
W6
2.0mm Pitch PH 2Pin E37-1486
CN52
E41-1682
TXRL
GND
CN51
E04-0190
RAT
CN10
E04-0154
TXOUT
CN11
E04-0154
ATCOM
YELLOW
W3
E37-1479
W2
E37-1508
CN9
E40-6881
1.0mm Pitch FFC 10Pin E37-1488
CN5
E40-6726
5A NC GND SPG VSF SP VSR 33C ID TXB
CN2
E04-0154
TXRF
BLACK E37-1493
RED E37-1494
CN800
E04-0191
CN100
E04-0191
2.5mm Pitch EH 2Pin E37-1501
2.5mm Pitch EH 2Pin E37-1500
2.5mm Pitch EH 3Pin E37-1499
2.5mm Pitch EH 2Pin E37-1502
BLUE
WHITE
RED
CN3
E40-6525
CN700
E40-6525
CN600
E40-6525
CN1
E40-6526
TX-RX UNIT
X57-785X-XX (A/2)
0-11: TS-590S (K)
2-71: TS-590S (E)
TX-RX UNIT (NB)
X57-785X-XX (B/2)
CN650
E40-6533
2.5mm Pitch EH 10Pin E37-1505
CN663
E40-6533
14S
NC
-6V
DCGND
GND
IBK
1STIF
NBL
8A
BLNK
CN674
E04-0191
E37-1530
RED
CN667
E04-0191
NBIF
-6V DC/DC
J1
E11-0414
EXT.SP 8Ω
J2
E56-0408
ACC2
J3
E06-0752
REMOTE
J4
E11-0455
KEY
J5
E11-0705
PADDLE
J800
E13-0166
DRV
J100
E13-0166
RX ANT



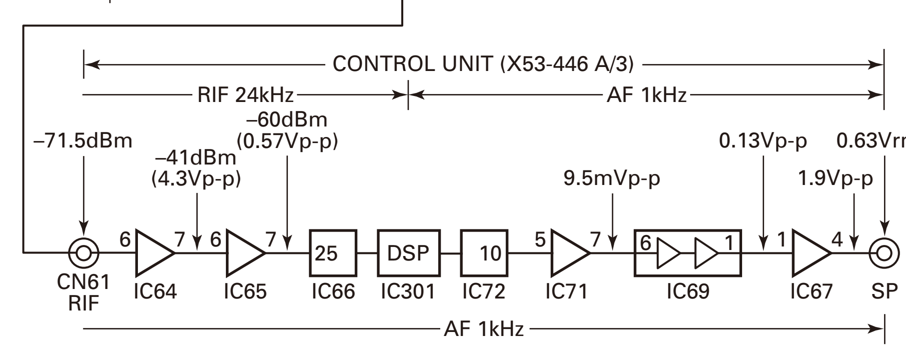
FINAL UNIT (X45-391 A/2)
TX-RX UNIT(X57-785 A/2)
TX-RX UNIT(X57-785 B/2)
ANT1
ANT2
K44 S76-0424
K45 S76-0424
K46 S76-0402
AT
ATS
TXRL
DET
VSF
VSR
RAT
DRV
RX ANT
K101 S76-0459
RXANT
K102 S76-0459
ATT -12dB (-20dB)
CN101 OPEN:-20dB
~60MHz
522k~1.705MHz
BC TRAP (EU TRAP)
CN102:DX CN103:NORM
ATT
PRE OFF
PRE AMP
Q236 2SC5551AF
HFRGC 50RGC
30k~522kHz
1.705~2.5MHz
2.5~4.1MHz
4.1~6.9MHz
6.9~7.5MHz
7.5~10.5MHz
10.5~13.9MHz
13.9~14.5MHz
14.5~21.5MHz
21.5~30.0MHz
(RX)30~60MHz
(TX)49.0~54.0MHz
TX:1.8M~54MHz
1.705~2.5MHz
2.5~4.1MHz
4.1~5.5MHz
5.5~7.5MHz
7.5~10.5MHz
10.5~14.5MHz
14.5~21.5MHz
21.5~30.0MHz
49.0~54.0MHz
Q3,Q4 RD100HHF1-102x2
Q2 RD16HHF1-102
Q1 RD06HHF1-102
TXRF
Q783 NESG260234
INTERNAL SPEAKER
T07-0765
SP
1.8M,3.5M,7M,14M, 21MHz AMA band only
RX 1st MIXER1 (HF→11.374MHz)
Q263,Q264 Q265,Q266 2SK1740-4x4
~21.5M
~60M
RX 1st MIXER2 (HF→73.095MHz)
Q321,Q322 Q323,Q324 2SK1740-4 x4
LO1 AMP1
13.174~32.195MHz
Q281,Q282 2SC5551AFx2
LO1 AMP2
73.125~133.095MHz
Q351,Q352 2SC5551AFx2
TX MIXER (73.095MHz→HF)
IC761 TA4107F-F
73.095MHz
11.374MHz MCF
XF301 L71-0656
11.374MHz
73.095MHz MCF
XF371 L71-0605
73.095MHz
RX 1st IF AMP (73.095MHz)
Q391 2SC5551AF
TX 70M AMP
Q742 2SC3356-A
ATT
CKS
PGC D/A
73.095 MHz
(RX:73.095M→10.695MHz) (TX:10.695M→73.095MHz) RX 2nd MIXER/TX MIXER
D422,D423 HSM88ASR-Ex2
RX 2nd IF AMP1
Q451 2SC5551AF
D461,D462 D463,D464 HVC131x4
TX ATT
TGC D/A
TX IF AMP (ALC)
Q721 3SK293-F
10.695MHz
ALC
POWER CONTROL
VSF POC ALG AMB
VSR PRO
VSWR PROTECT
IC801 NJM12904V
ID
ID PROTECT
IC801 NJM12904V
Q803,Q804 2SC5383-T111x2 Q805 2SC4617(R) Q806 2SK208-F(Y) Q807 2SC5383-T111 IC802 TC4W53FU-F IC803 NJM12904V
LO2 AMP
Q431 2SC3356-A
Q641 2SC3356-A
NB
NOISE BLANKER
NB AMP1
Q651 2SC3356-A
Q652,Q653 2SC3356-Ax2
NB AMP2
Q663,Q664 2SC3356-Ax2
NB AMP3
Q666 2SC5383-T111
NB AMP4
Q670 2SC5383-T111
D662 RB706F-40
Q667 2SK1824-A
Q669 2SC5383-T111
SW
NBL
IBK (from TX-RX UNIT X57-785 A/2)
IF FILTER
XF472 L71-0230 10.695MHz 15k
XF471 L71-0664 10.695MHz 6k
XF473 L71-0569 10.695MHz 2.7k
XF474 L71-0657 11.374MHz 2.7k
XF475 L71-0658 11.374MHz 500
DIODE ATT (10.695MHz/11.374MHz)
D522,D523,D524 L204BBBx3
AGCV
Q541 2SC3356-A
RX 2nd IF AMP2
IC521 NJM12904V
Q453,Q454 RT1N436U-T111
HFRGC 50RGC
Q521,Q522 2SC5551AFx2
RX 2nd IF AMP3
D525 L204BBB
IFGC
IC591 NJM2591V
CF591 L72-0998 455kHz 12k
IF AMP /DET
FM DET
IC592 NJM2732V
DET
67~3kHz
FSM (to CONTROL UNIT X53-446 A/3)
FSQL (to CONTROL UNIT X53-446 A/3)
IC631 TC4W53FU-F
NOT_FM (AM,SSB,CW,FSK)
RX 3rd MIXER (10.695M/11.374MHz→24kHz)
24kHz
D551,D552 HSM88ASR-Ex2
Q551 2SC3356-A
ANA_SW
RXFM
10M MIXER (24kHz→10.695MHz)
IC701 TA4107F-F
Q702 2SC5383-T111
IF11M:10.719MHz IF73M:11.698MHz FMRX:10.240MHz FMTX:10.695MHz
LO3 AMP
Q571 2SC5383-T111
NOT_FM RX
PADDLE J5 E11-0705
KYS DOT DASH
1:GND 2:DOT 3:DASH 4:KYS 5:KYS 6:NC 7:NC 8:NC 9:NC 10:NC 11:KYS
KEY J4 E11-0455
1:GND 2:KEY 3:GND
ACC2 J2 E56-0408
RTTY ANO SQC PKS ANI SS
1:NC 2:RTTY 3:ANO 4:GND 5:SQC 6:NC 7:NC 8:GND 9:PKS 10:NC 11:ANI 12:GND 13:SS
REMOTE J3 E06-0752
1:SPD 2:COM 3:SS 4:MKE 5:BRK 6:ALC 7:TX14V
EXTERNAL SPEAKER J1 E11-0414
4:ANG 5:PH2 6:SP
AGCV TIF AF RIF/DET PH1 PH2
PHONE J951 E11-0705
1:PHG 2:PH1_R 3:PH1_R 4:PH1 5:PH2 6:NC 7:NC 8:PHG 9:PHDET
CONTROL UNIT (X53-446 A/3)
FMOD
IC78 AK4387ET
IC76 NJM2100V-ZB
UAI
IC77 NJM2100V-ZB
AGCV
IC68 TC7W66FK-F
IC72 AK4382AVT
IC71 NJM2732V
IC70 NJM2732V
IC69 NJM2732V
Q62 2SK1824-A
AF MUTE
AMU
IC67 LA4425A
MODSEL
NOT_FM (AM,SSB, CW,FSK)
IC66 AK5385BVF
IC65 NJM2732V
IC64 NJM2732V
RIF/DET
IC63 NJM2732V
IC62 NJM2732V
IC61 NJM2732V
MSG MIC
IC75 AK4387ET
ANO
IC73 NJM2100V-ZB
VAI
IC74 NJM2100V-ZB
IC83 WM8782SEDSRV
VAO
IC82 NJM2100V-ZB
IC81 NJM2732V
VGS-1 X53-446 (B/3)
ANO (to TX-RX UNIT X57-785 A/2)
ANI (from TX-RX UNIT X57-785 A/2)
IC80 TC7W66FK-F
IC79 NJM2732V
ANISEL
DSP IC301 DC6726 BRFPA225
MCU IC306 F3651 RDFCKDTA
DOT DASH KYS KEY FSQL FSM SS
IC903 PCM2903B USB CODEC
UAI UAO
IC906 CP2102SX0567 USB_HUB
IC905 USB2512BI USB-UART
IC901 ADM3202ARUZ RS-232C
MIC J950 E06-0858
1:MIC 2:SS 3:MD 4:MU 5:8A 6:NC 7:MSG 8:MCG
DISPLAY UNIT (X54-370 F/6)
DISPLAY UNIT (X54-370 E/6)
CONTROL UNIT [LO] (X53-446 B/3)
LO1 LO2 LO3
73.125~83.095MHz
83.095~89.095MHz
89.095~103.095MHz
103.095~133.095MHz
RB715F
13.1740~ 66.5475MHz
Q663 2SC5108(Y)F
LO1-1 73.125~133.095MHz
13.174~13.374MHz/ 14.874~16.374MHz
18.374~18.674MHz
25.374~32.874MHz
LO1-2 13.174~32.195MHz
IC803 AD9951YSVZ DDS
IC804 UPC2710TB-A
Q804 2SC5108(Y)F
393.6MHz
Q807 2SC5108(Y)F
Q806
196.8MHz 194.4MHz
Q808 2SC5108(Y)F
FM TX: fø=120k Other: fø=2.4M
PLL IC801 ADF4111BRUZ
Q801 2SC4649(N,P)
Q506 2SC4649(N,P)
LO2 62.4MHz
62.4MHz
31.2MHz
Q504,Q505 2SC4617(R)x2
Q502 2SC5383-T111 Q503 2SC5108(Y)F
OPTION SO-3
Q501 2SC5383-T111
X502 L77-1906-05 15.6MHz
IC601 AD9835BRUZ DDS
Q601 2SC5383-T111
Q602 2SC5383-T111
LO3
IF11M:10.719MHz IF73M:11.698MHz FMRX:10.240MHz FMTX:10.695MHz
FMOD
1:VBUS 2:D- 3:D+ 4:GND
USB(B-Type) J902 E58-0537
1:NC 2:TXD 3:RXD 4:NC 5:GND 6:NC 7:CTS 8:RTS 9:NC
COM J901 E58-0529
DISPLAY UNIT (X54-370 B/6)
MULTI/CH S952 T99-0653
DISPLAY UNIT (X54-370 C/6)
MCU IC103 F364 AEDFBKDUA
LCD DRIVER IC101 LC75897PW
LCD B38-0934
DISPLAY UNIT (X54-370 A/6)
NOTCH/SQL VR954 R31-0677
HI/LO (SHIFT/WIDTH) S953 W02-3737
VR953 R31-0677 AF/RF
DISPLAY UNIT (X54-370 D/6)

Receiver Section

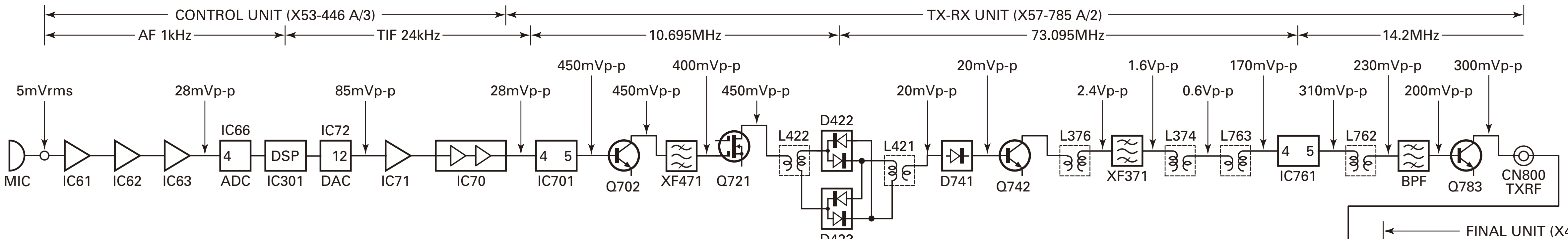


Measurement condition
Frequency: 14.0MHz
PRE AMP: ON
ANT input: –113dBm/0.501μV
AF output: 0.63V/8Ω, 1kHz
Mode: USB
The values in parentheses ( ) are those in FM mode
The values in parentheses [ ] are those in RX2 (IF1: 73.095MHz)

Input –113dBm from the antenna, set AF VOLUME so that AF output is 0.63Vrms, and measure the signal level at each part.
The AF section is measured with an oscilloscope and the other parts are measured with an RF voltmeter.



Transmitter Section



Measurement condition
Frequency: 14.2MHz
Mode: USB
MIC input: 1kHz/5mV
Output power: 100W
MIC level: ALC zone maximum

Audio frequency section is measured by the AF voltmeter or oscilloscope.
Radio frequency section is measured by high impedance RF voltmeter.